# CURRICULUM MAKING
# IN
# AN ELEMENTARY SCHOOL

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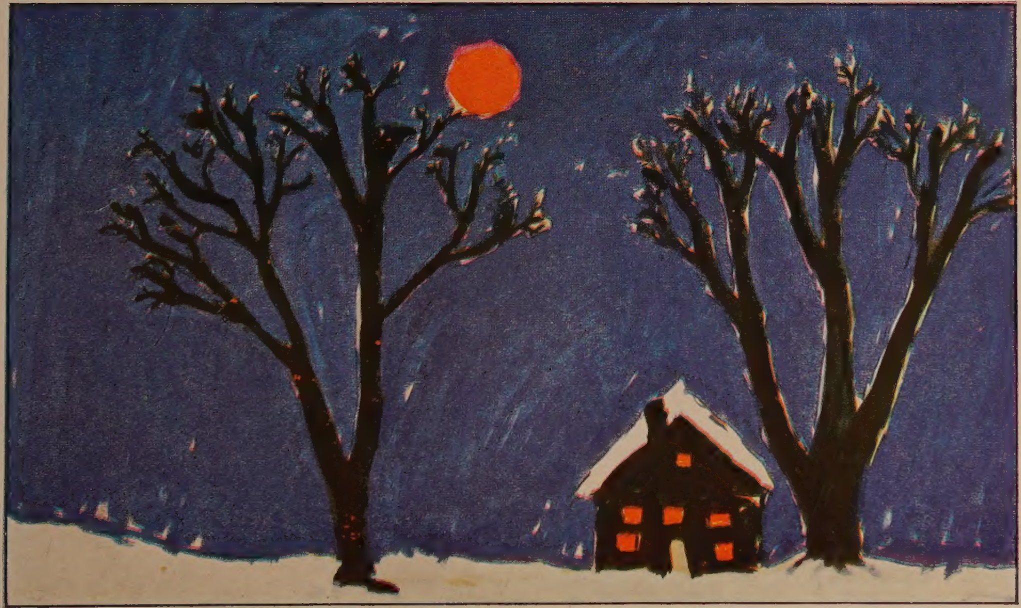

WINTER

Imaginative painting by a third-grade boy

Columbia University, Teachers college

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# CURRICULUM MAKING IN AN ELEMENTARY SCHOOL

BY

THE STAFF OF THE ELEMENTARY DIVISION
OF THE LINCOLN SCHOOL OF TEACHERS COLLEGE
COLUMBIA UNIVERSITY

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# FOREWORD

Because of its primary interest in curriculum making, the Lincoln School has from its beginning assumed a twofold nature. The school itself, its life, and its daily practices were matters of extreme moment. The children and their best development had constantly to be considered. These facts had much to do with making a sound foundation for such experiments as are reported in this volume. Practical working situations in a school as bases for experiments, with possible improvements, have been regarded as essential.

Rarely has a staff been able to work toward a goal consistently for ten years. Changes in personnel have not made large changes in the nature or general direction of the work. Devotion to a large task as the staff has seen it, freedom to work along special lines, and careful and constant preparation for freedom to work underlie the making of this book, in which the entire elementary staff in coöperation has described and interpreted its work.

Here is a theory seen in operation. It is a genuine pleasure, both personal and professional, to have sponsored this undertaking. It is hoped that teachers and parents alike will be aided in defining more clearly for themselves some of the aims of modern education and in working out ways of putting these aims into practice. Here are given not only the principles under which the work has developed, but the practical embodiment and outcomes of those principles.

A wider application of these techniques and materials in other schools and the maturing effect of longer use will be necessary for a sure evaluation of the results as here set forth. The experiments in curriculum reorganization on which the Lincoln School and many other agencies are engaged all need this wider and more thorough testing. Publication regarding new curricular materials represents a stage in progress, not a finished monument to be deserted by those who made it and later noted only by the occasional passer-by.

The careful and adequate foresight, the generous and sympathetic coöperation of the whole elementary staff, and this description of the first decade of their experimenting merit strong commendation and sincere well-wishing. If teachers and schools in general are helped in some measure to vision their own work more clearly, if they are assisted in a practical way in making it more fruitful for child development, then the Lincoln School will have fulfilled a part of its purpose.

OTIS W. CALDWELL

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# CURRICULUM MAKING IN AN ELEMENTARY SCHOOL

## CHAPTER I

### A COÖPERATIVE ENTERPRISE

"May I have a copy of that reading chart? Why do you not put it into a publication? Why isn't it possible for me to get that mimeographed booklet to present to our teaching staff?" So visitors at the school and teachers from the field have questioned. This book is an attempt to comply with their numerous requests. Ten years have passed since work at the Lincoln School began. Within that period some particular phases of the school, its life and work, have been described and the publications distributed. This is the first combined effort to give a rather comprehensive view of the whole elementary division of the school.

On the threshold of this book we shall give the method which has been followed in producing it. The enterprise has been a coöperative one by the staff of the elementary division of the school. Each has contributed, each has planned and criticized. All have insisted upon the most accurate records which could be given. Not only has the work together during these years of service been pleasant and profitable, as well as exacting, but we count ourselves exceptionally fortunate in having been given the opportunity to work freely in carrying out our ideas and in having been allowed to interpret the significance of our efforts.

A need for detailed analyses and exact checks upon curricular activities in the elementary school was expressed specifically and discussed at length at a special meeting of ten or twelve members from the whole staff. The director of the school had previously suggested the plan and had arranged that one member of the elementary staff should be relieved from all teaching duties for one year to help in this work. This member would be made responsible for an analysis and interpretation of the work as contemplated. All members of the elementary staff were to coöperate in the work. The representative who was to be relieved of teaching duties for the year would act as a chairman to assemble materials and to help carry the plan forward. It seemed best to use a member of the staff who was already familiar with the school rather than to invite some outside person to do the writing. This should save time, secure closer coöperation, and insure a more intimate understanding of all the various factors which enter into the organization, care, and progress of a school.

During the spring session of 1926, in order to determine upon a suitable proposed plan of work, the principal of the elementary division, the director of the whole school, and the chairman of the group held many conferences as to what should be included from the whole range of possibilities. Finally a plan was agreed upon, developed in detail, and presented for criticism and discussion to the whole staff.

That same plan was more specifically criticized by the staff of the elementary division at its individual meetings, and definite suggestions incorporated and desirable omissions made. During the year meetings have been held regularly once each week with additional conferences as needs required. Many changes have been made in the original proposal, but changes always based upon group judgment.

At its first meeting the elementary staff decided upon its initial special effort, the further study and criticism of the criteria by which units of work had been selected. Each teacher had held in mind certain reasons for selecting units of work upon which the class would engage. So each wrote out a list of the criteria which had been considered of greatest importance in selecting the units. These lists were then taken and each item arranged under topics or general headings by the chairman. The next meeting had as its purpose the criticism of meanings and of overlappings. Omissions were made when overlappings appeared in the statements as they had been regrouped under the larger headings. The discussion resulted in a proposal to formulate a set of statements which would include the criteria agreed upon as fairly basic. Fifteen such statements were formulated.

These fifteen statements were finally organized into the shorter list which appears in Chapter III. They represent the agreement of the whole group. It was felt that a limited list which could be accepted by all would give a feeling of greater surety in the actual selection of units of work for the different grade groups. Agreement, not compromise, is represented in the statement of the criteria. Individual differences of opinion were only minor. They appear in the detailed description of units, and so any values inherent in the different points of view are not completely lost.

Bare statements are often misleading. So the final step in writing the chapter on criteria for the selection of units was to elaborate each criterion to make it cover more perfectly the range of ideas, which was manifestly included, by illustrating it from our everyday school practice. The aim was to be more helpful to classroom teachers, whom we had considered as the larger group of appreciative readers.

Disclaiming finality in our statements, we have set out to give as clear a picture as we can of the elementary school at work. Naturally we believe in what we have done. But we know, too, that other methods of work upon the curriculum have been successful. We record ours as a sincere effort at the solution of problems which we think elementary schools must face.

The method of producing this book illustrates exceptionally well the way many of the activities of our school have originated and advanced. It is a method followed not only by the teaching staff but by the pupils, either of their own accord or under guidance, as, for example, when they felt a need for preserving in permanent form some of their stories, poems, and other written compositions and, after planning, sorting, and editing, finally published "Lincoln Life." A mere outline of this method has been given. We wish, however, to point out that it includes (1) a suggestion of need for publishing the book, (2) a statement of the problems, (3) searching definition of the problems to be solved, (4) arriving at statements or finding illustrations or giving objective evidence which solve the problems, and (5) this publication as an end point of one activity.

We wish to emphasize again that these steps in the writing of the book were taken as group steps. No part of this book has been included in its final form without careful revision by the whole elementary-school staff. Whenever individual teachers have made specific contributions, those have been subjected to the same revision and discussion.

Ten years of work! It will be scarcely possible or valuable to give detailed accounts of all that has gone into that time. Efforts that have ended in valuable conclusions have first place. Those which have been found impracticable or useless have been eliminated. Many which have been carried on are not mentioned, but their influences still remain to color what we say. Many are now in progress and will need to be described in other publications.

It will be absolutely impossible to give due recognition to the sources of the ideas which we hold and have recorded here or to all the people who have helped us possess them. We wish to acknowledge our great indebtedness to all the thinkers, the theorists, and the practitioners who have been similarly engaged. The practical interpretations and the actual work in the classrooms have been our own. Ours has been a work of synthesizing and of movement forward from that point. What has been done means much to us. What can be done means far more.

Freedom to work as we wished! Buildings and supplies adequate, at least for the most part, for our work! These opportunities have been furnished us by those who desire that education shall be better. Any failure to live up to them must rest upon our own shoulders and be counted among our shortcomings.

As actual practitioners in the field of elementary education we have addressed ourselves more particularly to the hosts of classroom teachers. We have attempted to illustrate all our statements and proposals by examples from actual school practice, so that whoever already believes as we do or begins so to believe may see how what we have done works out with us, or may visualize how it might work out in another situation.

The staff of the elementary division of the school which has prepared this book is composed of these members:

| | |
|---|---|
| James S. Tippett | Chairman |
| Rebecca J. Coffin | Principal |
| Emily Ann Barnes | Sixth Grade |
| Mary Elizabeth Barry | Sixth Grade |
| Ethel Bliss | First Grade |
| Edna Bridge | Fourth Grade |
| Thomas J. Francis | Fifth Grade |
| Martha Groggel | Industrial Arts |
| Avah Hughes | Second Grade |
| Katharine Keelor | Fourth Grade |
| Martha Kelly | Third Grade |
| Florence Matthews | Second Grade |
| Martha Peck Porter | Third Grade |
| Holland R. Sperry | Fifth Grade |
| Lula Wright | First Grade |

The staff wishes particularly to acknowledge its indebtedness to the contributions in thinking and in practical work of former teachers in the school.

# CHAPTER II

## THE LIFE OF THE SCHOOL

"Let us have an experimental school which will specialize in the development of better curriculum material or test the validity of that which is already in use." That was the reason for the Lincoln School; at least, primarily so. "But," said the director in one of his early and designedly few statements of general policy, "let us first, and above all, have a real school."

That decision of his made it possible to write with enthusiasm this chapter on the life of the school; that, and the fact that other people with a similar vision helped give an initial impetus to the venture. Merely an experimental school might have meant dry-as-dust scientific educational procedure. A real school meant an effort to supply an environment in which boys and girls and men and women could work and play, could achieve or even fail, but always with joy in their work. It would be the dough in which the leaven of scientific procedure would work.

To tell about the busy coming and going, about the freedom to go about jobs in halls and classrooms, about the friendly and helpful mingling of little children, high-school boys and girls, teachers, and adult visitors, about the general spirit of earnestness and of joy in what is going on, about the effort at appreciative understanding between teachers and pupils, about mutual respect for satisfying accomplishments, about readiness to lend a hand at whatever job presents itself, about the evident lack of harmful restraint while careful supervision and guidance are manifest, though unseen, would be to give a general impression indeed of the life of this school; it would be to show a wholesome medium for the most complete living and an expression of school life approaching life realities.

But this life is made of many special factors. It does not persist of its own momentum. New ideas, new experiments, added encouragement, and constant cultivation are required. Administrative staff, teachers, pupils, parents, all concerned, must keep a constantly renewed vision. Any slackening of vigilant guidance will end in weariness and slumping.

In the school the aim has been to have no extra-curricular activities, since every activity of the pupil, whether at school or at home, is considered a part of the general educative process. Considered so, everything which the pupil does gives its bit of color to the school curriculum. His visits to factories, his travels, his out-of-school drawings, his "hikes," indeed all his experiences, may be unified with his experiences at school as those at school become part of the experiences commonly called extra-curricular.

The activities aside from the actual classroom work which are particularly fostered by the elementary school are those growing out of the summer vacation, the council, and the assembly, those centering about the library, the gymnasium, and afternoon clubs, and all kinds of creative work in fine arts, literature, music, science, and construction, each of which will be discussed.

## USE OF ENVIRONMENTAL MATERIAL

### THE SUMMER EXHIBIT

From the very beginning of the school's history pupils have been encouraged and helped to bring into the schoolroom as much as possible of whatever interested them in the out-of-school environment. Interests from out-of-school hours and from summer vacations have carried over into school as well as interests from school into out-of-school hours and into summer vacations. A boy made a boat at school and studied about boats. He took the boat with him to his summer home, and there he and his sister played with it. In the autumn he brought back photographs which he had made which showed the boat with full sail spread as it raced on the lake near his home. His sister brought in a whole series of stories of adventures with the boat. The cycle was complete.

During the first weeks after summer vacations rooms and halls are filled with summer collections. The number and variety need not be enumerated at this place. A miscellaneous collection of shells in an ordinary cardboard box has come in from a first-grade pupil. It has a place in the general exhibit. A very carefully mounted collection of leaves, even with scientific as well as common names attached, has been brought in by a fifth-grade boy. It, too, has a place in the general exhibit, but no more prominent a one than the exhibit of shells. The school recognizes differences in ability, differences in interests, and differences in standards.

Only in special cases are assignments made for summer work. Many suggestions are considered and carefully explained in the spring so that the pupil will not be without ideas when the summer comes. That is part of guidance. What a pupil will do, if anything, is left to individual choice. In special cases where deficiencies exist, either in formal subjects of study or in character traits which would be helped by planning and developing a summer exhibit, definite work has been assigned. This work is always checked upon in the early days of the new session. The very fact that the summer offers such opportunities for individual growth makes the complete development of the pupil more certain.

The school wishes pupils to do their own work. Collections or any pieces of work which have been all too evidently made by grown-ups who have failed to recognize the educative possibilities for the child in his own collection, labeled and mounted in his own way, are not welcomed by the school. School collections are not for museum purposes. Parent and teacher, as well as the class, may suggest better ways to the child, or may even refuse to take his exhibit if it does not meet the standard which it is believed he could attain. But the work must be his.

The general exhibit of summer work is arranged by committees of boys and girls appointed by the council and under the leadership of teachers who specifically realize that the whole exhibit, to count for anything, must be recognized as a child venture under skillful guidance. The collections and exhibits from summer-vacation activities form the basis for much classroom work at the beginning of school in the autumn. Arranging the exhibits, preparing well-written and clear labels, and answering questions which other members of the class may ask take time. Often a long series of activities begins from seeing a summer exhibit, as when one boy wanted to make blue prints after seeing a collection of

What I Found out about
The Cicada.

Three or four weeks after we came out to the country, I began hearing a bug like song which came from what I called the Locust. I had seen them before but I wasn't interested in them.

One day I was throwing apples at a yellow hornet's nest and all of a sudden a big bug which I thought was a bee fell right down at my feet, which gave me a real scare. I soon found it was a locust. I picked it up and took it home.

Soon I found shells of the locust grubs on the trees. These I couldn't get home successfully because they would

ROOMS AND HALLS ARE FILLED WITH SUMMER COLLECTIONS

Above, miscellaneous collections made by pupils in the first and second grades. Below, a carefully mounted collection by a sixth-grade pupil blue prints of leaves. Finally his whole class took over the activity, and all learned the printing process. Questions may arise about summer exhibits which only an expert or a long period of study can answer, as, for example, questions about rocks and minerals which call for scientific information. One pupil brought back from the summer experiences an exhibit of fossil-bearing rocks. During the weeks that followed the teacher helped stimulate a very real interest in fossil remains, and a class study came out of it. The class made a larger collection of fossils for its room. It made trips to museums to see fossils and searched the library for answers to its questions. Finally it put its findings into a little class book. The activities accompanying and following the arrangement and display of summer exhibits are always numerous and valuable.

## THE ELEMENTARY COUNCIL

We have mentioned the council as having appointed committees to arrange the exhibit. An elementary council has existed from the first. In the beginning, when the school was small, two members, a boy and a girl, came from each class in the elementary school. Later that was changed to two members from all grades above the second and optional representation from the first two grades. Does the council transact all its business alone? Frankly, No. There has been an adult adviser always and many coöperators among adults in the various enterprises. The adviser is a member of the teaching staff. The most essential work of the adult adviser in an elementary-school council is to help the members to see and appreciate the great possibilities for work, and pleasure in work, in connection with the various undertakings for service for the whole school. An example will show what is meant.

Pupils, after they have reached the fourth grade, may use the school lunch room unattended. They select their own lunches, subject only to health regulations as administered by the lunch-room manager. They choose any table they wish at which to eat. The arrangement is similar to any public cafeteria. Of course, there are many problems which come in connection with such freedom. In one year it happened that the lunch-room manager, the teachers, the principal, the parents, and the children began at about the same time to manifest dissatisfaction with the general disorder in the lunch room. The lunch-room manager sent a letter to the council and asked what it could do to help. It thought it could put up signs and change the tables. So it could and did; but the adviser saw an opportunity to make the work more effective. "How would it be if we had our next assembly meeting about the lunch room?" "Yes," said the president of the council, "and the others could tell us what they think."

So an assembly of the grades was called by the council. The lunch-room committee of the council presided. The lunch-room manager gave a brief discussion of the problems. The president of the council asked for pupils to tell what they thought. The suggestions were almost too numerous. The principal of the elementary school saw a very real opportunity to stimulate some good thinking and some careful organization of ideas. "What could we do to get all these suggestions into usable form?" she asked. "The lunch-room manager could write them out for us." So they might have decided.

But the principal saw greater possibilities than that. "Yes," she said, "the lunch-room manager could do it. But could the classes each write out suggestions and send those to the council?" Of course they could. And that was what they decided. In arriving at the decision each person in the assembly room had the benefit of the ideas and suggestions of the others. The council could give an added impetus, for the suggestions came in a few days, and the adviser was at the meeting to help influence decisions so that the greatest good might come to the lunch room. The council members probably would have gone back to the routine of putting up signs, or arranging tables, or putting all the pupils of one grade at the same table for supervision. The adviser wanted to help them use the freedom which they had been given. So the suggestions were organized, and the best of them sent out to the classes in mimeographed notices. Pupils were told how they could help. A selected committee from the council went to watch the progress of their efforts, and later meetings of the council considered what more needed to be done. From this series of discussions and conferences some of the classes were led into very helpful classroom discussions about the selection of proper lunches as well as about the most suitable behavior in the lunch room.

Here was a technique for getting all sides of a question considered, for the organization of ideas, for putting decisions into effect, for checking the results of such decisions, and for much practice in coöperation. Perhaps the next time the council would need far less direction and help. It would take over something of the method of work and would evaluate its efforts in a larger way. Help given to the council and the school in seeing that more could be done with the Junior Red Cross than just to give money is another example of the influence of adult advice.

How the refrigerator was purchased for a nursery in the community near the school illustrates again the desirability of wise vision and supervision on the part of adults in the group. At Thanksgiving the whole school fills baskets with food for some of the particularly needy cases about which it has heard. Any oversupply of food usually is sent to the nursery near. A group of council members went with a teacher after one Thanksgiving to find out whether the nursery had any special need. They reported to the council that a refrigerator was needed for the milk which the nursery supplied to its children. The council had too much to do in connection with Christmas stockings to take up the work at once, but it said that after Christmas it would attend to the matter if it could.

After Christmas the council had in a way forgotten the request and was considering what it could do to be of best service to the school. Here was the opportunity which the adviser could use. At the regular weekly council meeting, which is held in one of the class rooms, she asked permission to recall the request about which she had heard from the council group who visited the nursery. She gave a more vivid, more human touch to the suggestion of need for the refrigerator.

The important question What shall we do about it? followed her presentation. Perhaps she asked the question. An experienced council member might have asked it; probably did. The teacher-adviser would do it if a member of the council did not. If she had not sensed the opportunity which the question gave for her guidance, rich educative possibilities for the whole school would have been overlooked.

The easiest and most uneducative procedure would have been to take a collection or to ask the school to send the money to buy the refrigerator. But the adviser had thought. She had seen the chance to help educate the pupils. She wondered, "Yes, we could do it that way, but do you suppose we could earn the money? Could we sell anything?" A pupil experienced in school and council procedure might well have been the one who would do the wondering. The council was sure it could sell things. It would ask the pupils to bring old things from home and have a rummage sale. Again "No," the adviser thought to herself. And aloud, "How would it suit if we had a bazaar and sold things which the different classes had made?" Just the thing. And they planned to call a conference of the elementary school in the assembly room, at which time they would find out what the other pupils thought about it. At the conference the other pupils were enthusiastic, of course. They suggested a hundred articles which they could make and sell. The council went into a later session and sent out word through a mimeographed bulletin that a bazaar would be held to make money to buy a refrigerator for the nursery. Each class was asked to tell what articles would be made for the sale. Only worth-while articles would be accepted. A committee would pass upon them. Note the effective method of raising standards of work, of impressing the importance of evaluating a product. Perhaps the next time the council will take over much of the same technique, and, with practice, may even come to do without any but the most meager supervision and advice.

A HUNDRED ARTICLES THEY MADE AND SOLD

Clay modeling. Articles made at various times for the sale to get money for buying the refrigerator

Is there too much teacher direction? The principle has been to go directly at a job if it needed to be done and to use the best help available. If any special value could be secured in no other way than by letting the council flounder about for several meetings, that would be permissible. The adult leader or coöperator is on the lookout for opportunities to make the work most educative.

The pupils, as is a common experience, in the beginning of council life or in the beginning of room organization like most of all to deal with cases of discipline. That was true in the Lincoln School. Some disciplinary cases still come before the council, and the adviser helps the members to decide wisely on any such occasion. But the disciplinary work takes a small amount of time at present and is concerned chiefly with group conduct in lavatories, lunch room, or halls.

There are many small problems concerning the school which the members of the council see and for which they, of their own accord, take responsibility. The president of the council, for instance, has noticed a window shade in the assembly room which cannot be lowered when necessary. She tells the adviser about it and is encouraged to go ahead and do what she can to have it put in order. The adviser tells her who would be the proper person to see for help. The president has the shade working properly at next assembly time. Oftentimes the members of the council do not feel the need of help from the adviser; so they go ahead with what they see the need for doing. But the things which they undertake are usually small problems. That is consistent with their age.

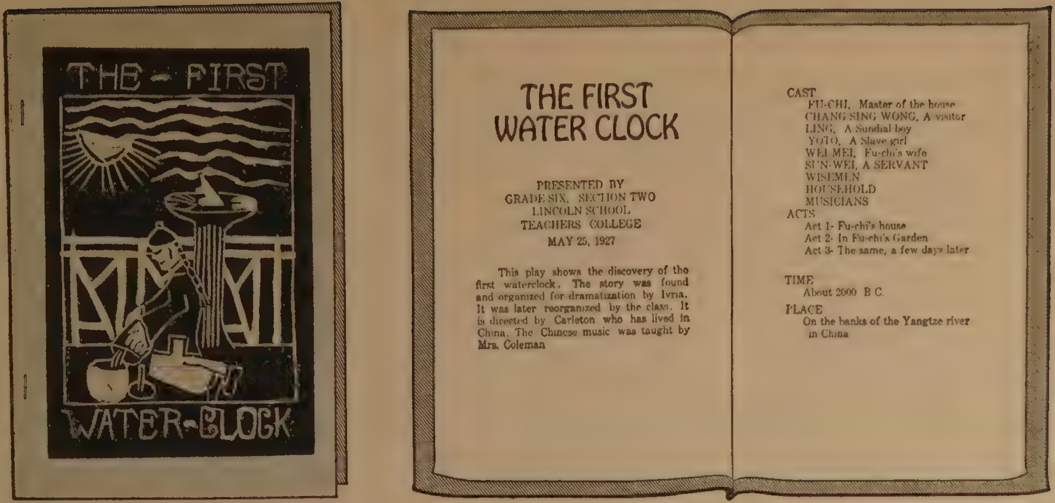
The council has become so indispensable a part of the school that it is used by teachers, classes, and principal as the most efficient avenue through which much of the business of the school may be transacted.

## ASSEMBLIES

Sometimes the council makes plans for assemblies. There is always an assembly committee as part of the council. Its most important duty is to make plans for worth-while assemblies and to take charge of the handling of the program it has planned. It also has duties of giving notices, of proper seating arrangements, and of general responsibility. Each week, on Wednesday, the elementary school meets for an assembly. At times certain grades should not attend. The first grade probably would not attend a talk on trees which had come about from questions asked by older children. The older groups often do not attend assemblies which have grown out of the work in a lower grade. What will be educative? Teacher alone or teacher and class may decide.

The assembly is an intimate part of the school life. Through it there is the opportunity for the whole school to work together. The assembly meeting is often held as a clearing house for the working out of some plan which concerns all the classes. The council has found, for instance, that a community nursery in which it takes a very real interest has some special need. Through the assembly the need is presented and explained. A plan is made, and developments of the plan are reported and fostered through the council and its assembly committee.

It is through the assembly that the different classes share with each other the special work which has interested them most. Programs based upon the work in a particular grade, as one on "How Man Has Made Records," one on Indian life with a play called "The Rainbow Trail," or one on milk, are given. There are programs of music, sometimes the songs made by the pupils in different classes, sometimes a series of piano selections which show the different kinds of dance rhythms. There are programs of Creative Music at which the children play upon instruments they have made. There are programs which have been arranged to answer questions which children have asked, or to show how to do interesting things. There are plays and readings of poetry and story-telling hours. There are Christmas programs. There are moving pictures or slides to illustrate the growing of wheat or the making of a book, for example. Every kind of program which has value for educative purposes finds a place. Assemblies for the mere sake of assembling are not tolerated. There is no meeting if there is not something of value to be given. The most worth-while of all the assemblies are probably those arranged by pupils as a part of their regular school activities. Such programs call for selection of desirable material for the program, plans to make the audience understand, construction of illustrative devices or of scenery, and for a large variety of classroom discussions and decisions. No small part of the educative value of the assembly is the opportunity which it provides for learning under sympathetic guidance just what is expected of those who give and who hear public presentations. We do not dwell here upon opportunities to speak in public, to speak extemporaneously, and to meet the requirement for clarity and ease in presenting a point of view, or upon other familiar values of assemblies.


THE - FIRST
WATER-CLOCK

THE FIRST
WATER CLOCK

PRESENTED BY
GRADE SIX, SECTION TWO
LINCOLN SCHOOL
TEACHERS COLLEGE
MAY 25, 1927

This play shows the discovery of the first waterclock. The story was found and organized for dramatization by Ivria. It was later reorganized by the class. It is directed by Carleton who has lived in China. The Chinese music was taught by Mrs. Coleman

CAST
FU-CHI, Master of the house
CHANG SING WONG, A visitor
LING, A Sundial boy
YOTO, A Slave girl
WEI MEI, Fu-chi's wife
SUN-WEI, A SERVANT
WISEMEN
HOUSEHOLD
MUSICIANS
ACTS
Act 1- Fu-chi's house
Act 2- In Fu-chi's Garden
Act 3- The same, a few days later

TIME
About 2000 B C.

PLACE
On the banks of the Yangtze river in China

IT IS THROUGH THE ASSEMBLY THAT THE DIFFERENT GRADES SHARE WITH EACH OTHER THE SPECIAL WORK THAT HAS INTERESTED THEM MOST

Pupils of the sixth grade gave an assembly program based on their unit of work, "How Man Has Told and Recorded Time." They made the linoleum block cover, set the type, and printed the programs

### THE LIBRARY

Of course there is a library in the school. As soon as pupils have mastered the actual mechanics of reading (at times even before) they go freely to the library. It is centrally located and pleasantly arranged. In it are found exhibits of current interest, open and easily accessible bookshelves, and a librarian who is always ready to help, graciously and understandingly, in the selection of a book which is within the range of the child's reading ability and his life experiences. The teacher often makes the selection of books much simpler by giving out lists of suitable books to the members of her class; different lists usually for different pupils, because abilities and needs differ so much. Few textbooks and few sets of books are used in the elementary division of the school. Most of the books the pupils use belong to the library.

Teacher and librarian are alert to prevent a child from reading only fairy tales, only history, only science, only poetry, or only books about doing things. The constant effort is to broaden interests as well as tastes.

"Now just how high do you think dikes are?" asked a boy in the third grade. No one knew definitely.

"Why not go and find out at the library?" said the teacher. He did go and found out, too, and brought back the information to his class.

Never an hour goes by but one or more children are making use of the many privileges of the library, either for class use or for personal pleasure. This is illustrated again and again in the detailed descriptions of units of work which are given in Chapter V. Pupils are expected to act in the library as people in any good public library act, and they do.

MAKING USE OF THE PRIVILEGES OF THE LIBRARY

The library is a reference room in which pupils may receive help when they need it. They may go there to read for pleasure

## PHYSICAL EDUCATION

The gymnasium is always in use. What does it contribute to the life of the school? Playing fair, being a good loser, taking turns; these ways of acting get constant practice. And they get a culmination of practice when the fourth, fifth, and sixth grades of the elementary school are divided into red and blue teams and have an indoor or outdoor athletic meet. Competition is practiced, too, and in a way which is wholesome. The pupils are divided into teams at least twice during the year. Jack may be a red in the indoor meet and a blue in the outdoor meet. Every member of the grades included in the meet takes part in the contests, which are always team contests. Points won are always team points. The excitement before the meet mounts higher and higher; but the day following or at most two days following probably the new division is made, and the classes go on to other activities.

## AFTERNOON CLUBS

The nearest approach in the Lincoln School to an extra-school activity is the afternoon club. Membership in such a club is voluntary, and a charge in addition to regular school tuition is made for it. New York City offers few opportunities for normal free play. The afternoon club has been considered of value in meeting this special need for such free play in the open air. The school has a roof playground, two indoor gymnasiums, and two outdoor playgrounds. The recreation and club leaders have instituted a play program in which the pupils have a chance to initiate games for themselves, to find material with which they can play, and to make the most of the hour and a half which they have for club. They have found that this period has great possibilities for developing the social attitudes of give and take. Pupils have an opportunity not only to follow but to lead in situations which are not too much directed and controlled by adults. There is definite supervision for the recreation and club period. This is necessary when play is carried on in narrow quarters with many children participating. But the attempt has been to have normal, healthy, outdoor play under conditions which approach as nearly as possible the free yard and home play in more favored cities. The activities of the afternoon clubs are further supplemented by Saturday "hikes" and week-ends at the school cabin in the country.

## THE SPECIAL CREATIVE-WORK PERIODS

To provide for the growth of the individual in every way, it is necessary to give him time for individual creative effort and to provide actual material to allow for the expression of his desires. Each teacher provides periods in the daily program for carrying on individual work. This work sometimes relates to the class activity; sometimes it is a purely individual matter. The pupil may make an hourglass to illustrate a part of the Time unit which is the central activity of his class, but he may at the free period make a song for use in Creative Music, or draw a map for fun, or make a table for his own room. The school provides material such as clay, paper, wood, paints, cooking apparatus, and dyes and shows possibilities in the use of them. The child chooses what he will do. Thursday afternoons have been set aside and called Creative-Work periods. In Chapter IX we report more specifically upon the organization of those periods. Here we are only indicating that the school must make provisions for the individual to grow as an individual.

## USE OF SPECIAL ROOMS

During the period set aside especially for individual work the school laboratories are in general use. The clay room, the industrial-arts shop, classroom work benches, the library, the assembly room, the music room, the household-arts rooms, the fine-arts studio, all are available for whatever purposes the pupils may have. Within limits, however, this is equally true at any time during the day. If the fine-arts studio or the print shop, for instance, is not being used by a class, any individual or group may secure permission to go there and work. The science laboratories are in too constant use by high-school classes to allow much time for the elementary school. There is flexibility usually in the use of special rooms. This allows for the carrying out of real purposes, and it gives many opportunities for exercising self-control and for assuming responsibility.

## THE CLASSROOM

The development of an all-round, harmonious personality is really behind the program of activities in the life of the school. Each activity is to take its place among the factors which contribute to this harmonious development. How does the classroom make a specific contribution to the life of the school?

Within the classroom itself teachers and pupils live together. Things of common interest are discussed.

Reports on things of common interest have a prominent place on the program. Exhibits are everywhere in evidence on walls or in cases. These exhibits show sometimes the summary of a piece of work which has gone on in the class. They are displayed in the wall cases to make it possible for other classes to share with the particular class which did the work. They furnish an excellent review of the whole subject. Sometimes the exhibit is made by a pupil to show material which has particular individual interest. A child's parents have been in the Philippines and have brought back much interesting material. That child shares with the others through putting up an exhibit of the Philippine material. An exhibit is sometimes arranged by the teacher in order to stimulate class interest in some topic. There are many exhibits which are collections of work from many classes. Frequently other classes are asked to contribute if they can to the exhibit which is being prepared by a group. The class itself will usually have its own room organization with committees and projects under way. The class has a time for discussing the problems which present themselves to the whole school. Information about these problems usually comes through notices from the council. The members of the class take a very real interest in assemblies, council meetings, and other activities of the whole school.

Each classroom is a real workshop. The child comes to believe in the value of his own work. He is not overpowered by the display of adult art, adult organization, or adult grandeur, although there is a place for respect for adult achievement. He sees his own drawings displayed. He is a part of the class undertakings and helps plan all of them. There is no atmosphere of unwholesome suppression. Pupils are free to select worth-while problems for work, to work on contributions to class activities, using whatever help can be found and being encouraged to check what they do in accordance with their ability to achieve.

The work of the classroom, as the life of the school, does not proceed of its own momentum. The great responsibility for the success of the classroom as an integral part of the life of the school rests upon the teacher. What she does is all-important.

Publications of the Lincoln School on related topics:

Descriptive Booklet of the Lincoln School. 1925.
European Relief Fund Bazaar. 1921.
Lincoln School Building. 1923.
Lincoln School Library. 1923.
Some Uses of School Assemblies. 1922.
Student Councils. 1922.
Vacation Activities and the School. 1925.

# CHAPTER III

## CRITERIA FOR SELECTING UNITS OF WORK

"But what does go on in the classroom," asks someone, "and how is it brought to pass?"

In experimenting, the elementary division of the school has sought to develop newer curricular material which would center about rather large and meaningful units of work. In that way the whole life of the child in school might more nearly approach real life situations. Harmonious growth of the child is desired, and growth does not take place in compartments. Real learning which will be made use of in solving any problems of life takes place in situations approaching those under which the problems are likely to arise. The learner draws upon all fields of information and skill. He assembles facts about some difficulty and, by seeing new relationships, finds his solution. It seems sensible, therefore, to use centers of interest or large units of work or important projects to give the child the feeling of completeness in experience. Units of work, as the expression will be used hereafter, means the larger learning situations which will draw upon all phases of experience and make use of all kinds of subject matter. These large units of work become the core of the elementary-school curriculum.

At the same time at which any large unit of work is being followed, many smaller units may be in progress. Some of the smaller units may be related to the large unit, others may be wholly unrelated. Some of the smaller units may have to do particularly with the subjects of study. A transportation unit is in progress in the fifth grade. It occupies the chief place in the general scheme of work. But at that time the class may be working on some phase of the banking activity of the elementary school, as, for example, keeping the books of the bank, or they may be finding a better way to get each person to perform the jobs which he has assumed, or they may be practicing handwriting or writing poems about the snow or the spring, or they may be reading some special story for entertainment. The question often arises, "Does all the work of your class come in connection with the unit of work which you have selected?" Our answer is, "Not at all." Much of the work does arise in connection with it, but there are group and individual units of work which have little or no connection. Much of the work in the formal subjects of study arises in connection with the large unit of work or with some other units, but there is also work in the subjects of study which is meant to give the pupil skill in their use. Special lessons in reading and arithmetic, in history and geography, are given whenever it is felt that some essential need of the class is not being met. If, for instance, no arithmetic work came from the unit, time would still be provided for arithmetic drills. When the units which have been developed in each grade are described in another chapter, it is hoped that all the different phases of the work of the class will be made clear. Our immediate purpose is to show how the large units of work or centers of interest have been selected. In the beginning many trials of materials which did not work acceptably were made. Still more trials will need to be made. From our experience in selecting and rejecting units we have arrived at a set of principles for choosing them. Whatever unit is chosen it should be checked by the criteria, and if it does not measure high, then it should be rejected.

The criteria are given below. They have been illustrated from actual practice in order to be more helpful.

> I. The unit of work must be selected from real life situations and must be considered worth while by the child because he feels that he has helped select it and because he finds in it many opportunities to satisfy his needs.

The real life situation may be one which the child or group suggests because of past experiences or present needs, or it may be chosen because of the teacher's presentation, or because the setting of the stage has made it seem worth while to the pupils.

Since the unit of work develops from a real life situation, it will be close to the child and will supply many opportunities for him to satisfy present needs as well as supply the stimulation for more and larger needs. No unit should be selected if the material for its successful working out is not at hand or cannot be readily produced. And no unit should be carried farther than the group as a whole can go with satisfaction. Of course, new presentations may make the prolongation of the unit possible, but always the teacher will be guided by these two considerations: the unit must be kept near to present needs, and it must be thought worth while by the child.

The Farm Life unit in the first grade makes use of the child's well-known interest in animals, his familiar experiences on the farm and with farmers, either during the summer, on excursions, or as a farm child, and his desire to play with materials, to dramatize his ideas. Children in the first grade would not suggest farm life as a desirable unit about which their work might be unified, of course, but they will take over the suggestion immediately.

A very desirable approach into the unit "How Man Has Made Records" in the sixth grade is through a school magazine. Pupils like to make their magazine. They like planning and putting through the venture. Making of magazines is one of the important industries of present-day life, and the boy or girl feels a contact with reality. It is possible to find much illustrative material to make the unit live before the pupils.

A third illustration of work selected from real life situations is the study of fruits and vegetables in the fourth grade. The beginning is made through the child's desire to cook and the real need for preserving the quantities of fruits and vegetables which are found in orchard and garden about the time of the opening of school. In the Lincoln School the fact that pupils begin to choose lunches independently in the fourth grade helps determine the desirability of such a unit.

> II. The unit of work must afford many opportunities for real purposing and real projects, and it will be something which the child can carry into his normal activity.

The unit on transportation in the fifth grade gives the opportunity to collect exhibits of boats and of engines and to show the evolution of the wheel. There will be trips planned to see particular things, as a series of boat models. In the city there are many kinds of transportation, and the pupil will see all of them and make reports about them. Pupils will make models of boats, of trains, of wagons. They will plan a frieze for their classroom and show in it the history of transportation — its evolution from primitive to modern times.

In the unit "How Man Has Made Records," the pupils make a play out of the book "Gabriel and the Hour Book"; they plan and give an assembly program to show the progress of their study; they make illuminated texts; they make paper; they plan to make an exhibit in the hall cases.

### III. The unit of work must stimulate many kinds of activities and so provide for individual differences.

Some of the outstanding normal activities of children are constructing, playing, dramatizing, exploring an environment, and giving other expression to creative energy. Each unit of work should be broad enough in range of possible activities to provide for the exercise of each child's particular choice as well as to make it possible for him to have experience in all kinds of activities through directed choice. A unit of work which is narrow in range of possibilities for activities is less desirable.

Every child in the group need not engage in every kind of activity, but he must feel that his activity is contributing to the unit as a whole and he must not be allowed too soon to become a specialist in any one field.

In the boat study in the third grade there is opportunity to make boats of wood and clay, to draw pictures of boats, to go to see boats at the piers, to study harbor life, to visit boats which are taking on cargo or discharging it, to write stories and poems about ships, to make a booklet of stories or trips, to read about boats, to hunt up special information, to study water displacement and the use of the keel, to make a play about sailors (the Vikings), to give an assembly program, to make cut-paper pictures, to travel in imagination; indeed, it would hardly be possible to name all the different kinds of activities.

Occasionally a unit of work which is less rich in opportunity for different activities is chosen because of a particular service to be performed. Such a unit of work is the bank in the fifth grade. Activity is limited in this unit; but because the unit represents such a particular type of work which people should understand, it may well be chosen.

In order to compensate for any narrowness in opportunity for the expression of individual creativeness, each daily program gives time for free work. It is one purpose of these periods to provide that the child does not become warped and that he does not get cheated out of his opportunity to do many kinds of things. During the free periods he may choose what he will do.

IV. *a.* The unit of work must make individual growth possible.

Within the range of the activities which take place in the development of the unit of work, each pupil on his intellectual level and on the level of his physical coördination must find it imperative to exert real effort. This means that real growth from one standard of work to the next must take place within the particular unit.

A pupil who had made a boat at the beginning of his third-grade boat study would be required to produce a better boat if he made one at the end of his third-grade study. The product would be better because his plans, his use of chisel and saw, his selection of wood — indeed, his whole method of work — would be better. His second boat might not be the best in the class, for other pupils would certainly be working at different growth levels than he, but it would represent a better individual standard of work.

In the same way his use of reference books in finding out things about boat keels or about the Phœnicians and their boats would improve. The teacher would be responsible for seeing that such improvement in many skills, habits, and attitudes was taking place. There would be a progressive growth in standards applied to his intellectual activity and to his physical activity.

It is at present, and probably always will be, impossible to apply absolutely objective standards to growth at all levels and under all conditions, but it is essential for teacher or parent to discover whether the individual child is keeping the same standards of work from month to month throughout the year. Samples of work kept, and from time to time compared, will make the pupil conscious of growth or lack of growth in his standards. One product of the pupil in the field of manual activity, such as a boat or a clay castle, compared with another product of his in the same field will do much to improve his standard of achievement in manual work. Some such comparison in the field of dramatic activity, of intellectual activity, or in any other kind of activity will do the same thing for him in those fields. The absence of such exact measuring sticks as exist in reading or in handwriting need not handicap the teacher at all in securing growth from one level of experience to the next if the unit of work is so chosen as to make many activities and therefore much growth possible.

IV. *b.* The succession of units of work must provide for continuous group growth from one level to the next.

The main trend of the unit must be well within the grasp of the whole group. The level of group growth in the first grade is very different from that in the fifth grade. And the fourth-grade level also should be different from that in the fifth grade. So the units of work must make it possible for the whole group to grow continuously.

If a study of milk is chosen in the first grade, how will it differ from the same unit of work if it were chosen for the fifth grade? In the first grade the child will talk about cows. He will learn about how the milk is taken from the cow and how it finally reaches his door. The unit will be concerned chiefly with the animals on the farm and what they do for man. In the fifth grade the study will include an analysis of milk into its component parts, a visit to the pasteurization plant with a study of the scientific principles underlying the process, the Babcock milk test, the different kinds of cows, what to feed to secure the largest amount of milk, the location and importance of dairy farms in the United States and the world, and such intellectual interests as these. There will be much activity, but it will have a more intellectual aim. At least it will end in the accumulation of more exact and more extensive knowledge.

Studies of boats in the third grade and in the fifth grade represent essentially the same type of difference. The work of the fifth grade becomes more intellectual. It builds upon the knowledge which the pupils have gained in a previous study. It would be quite possible to return to a further study of boats in a much later period of school life and extend meanings in the light of further experience. Pupils often say when some unit of work is being considered for a particular grade: "Oh, we had that in such and such a grade. We know all about it." Sometimes they speak truly. Further study or more knowledge about that unit is not demanded by any of their present needs. The first study exhausted the possibilities or the way was not opened for any further work along the same line. Ideally no unit of work should represent the end of individual or class curiosity. It may represent satiety, but an important phase of the teacher's technique is to leave each unit with the feeling that there is a fascinating field for further investigation which neither the individual nor the whole group has yet touched. This creates an attitude for continuous individual and group growth.

> V. Each unit of work must furnish leads into other related units of work and must stimulate in the child the desire for a continued widening of his interests and understandings.

A unit of work which is narrow in its applications will be considered less worthy of group effort than one which not only stimulates many kinds of activities but also leads the child to discover interests and possibilities that invite him to go on to other fields.

Suppose that pupils in the second grade have begun to make a play city. Out of it may well grow a play store and the selling of real school supplies. There may grow out of it a study of primitive ways of securing and preparing food. A whole range of activities opens up. The pupils may even find it necessary to carry on the work for another year in order to satisfy their desire to know about the city and its life.

All the units which have to do with people of other lands, such as the study of China in the third grade, lead on to studies of other peoples. Pupils who have studied Holland are ready to work out an Eskimo village and explain the life of the Eskimos, or they are ready to go into individual studies, each selecting for himself the people whom he finds most interesting. A common experience of ours is to have pupils who have made a study keep on bringing to the attention of the class related material. Often high-school pupils bring back to the elementary classes materials which they think would help illustrate some study in which they formerly engaged.

VI. Each unit of work must help meet the demands of society and must help clarify social meanings.

It is not enough that any unit relate closely to the present needs of the child or to real life situations. It must make the child more alert to his social environment and help him to understand the meanings of adult society in which he is to have a part.

Every unit of work must therefore be rich in its cultural background; that is, in history, geography, literature, art, and science. The child must come to know the contribution of the past to his environment and the possibilities of the future for widening his outlooks and attitudes.

It is the intellectual content of the unit with which we are here concerned. The reason that a unit such as the one on time in the sixth grade is proving so valuable is just that it is so rich in intellectual content. Geographical meanings, historical developments, scientific inventions, astronomical observations — these topics, if properly developed and enriched, continue with the pupil as interests through life.

Similarly, the unit "How Man Has Made Records," in the sixth grade, has an absorbing cultural background: early efforts at making records; pictures used for records; printing; books; libraries; and all the abundance of modern inventions. The work of the monks of medieval times put into that unit in proper relationship to other developments of the recording of man's efforts has a meaning that will not fade away. The boy or girl who has helped develop such a unit will always be alive to the paper mills, the newspaper and bookmaking industries, and the libraries and collections of books. The meaning of all these will extend as he has more experiences.

One important task of the teacher is to sense the richness in cultural background of the different units which could be used. If the teacher does not know the primitive life of man and the changes from handwork to factory work, a study of toys in the fourth grade had better not be undertaken. And, besides that, the teacher must know of the wide distribution of toy-making centers, the special characteristics of the people who make the toys, and the long sweep of history as it is reflected in the toys of the people.

VII. Each unit of work must be accompanied by progress in the use of such tool subjects as contribute to that unit.

There must be progressively increasing skill in the use of a tool subject, such as reading, to allow for a proper enrichment of the units of work. Through the unit of work a readiness to read develops. The child sees so much which he could do if he could only read well enough. He is well disposed toward the acquiring of the skill.

The unit of work should stimulate the use of the skill subjects. The child needs to read better. He needs to make better sketches. He needs to use reference books to better advantage. These needs arise in connection with his normal activities. His feeling of need for the skills is strong. He finds in satisfying immediate needs that greater excellence in the use of the skills enriches his satisfaction in carrying on his activities. So periods of intensive attention to some skill find a place in the program. The child goes further than merely getting enough of the skill to carry on his activity. Often narrow mastery does not satisfy him, but he goes on to extensive control of the skill or to an enlarged fund of information which may be quite unrelated to any present demand.

Certain skills have been found to be necessary to the successful realization of most activities. These minimum essentials are diligently sought for.

In our analysis at the end of each of the units of work we show what use was made of the tool and information subjects. At this place it is only necessary to point out that probably fields of information are touched in the elementary school which have heretofore been considered to belong to the high school; for instance, water displacement, as studied in connection with boats, electric wiring as studied in connection with the play city, and hieroglyphics as studied in connection with records. The skills which have been mastered are probably more lasting because learned in connection with actual doing. There are some skills which are required in the elementary school that formerly had placement much later in the high-school courses. Examples of such skills are the exact use of reference books, of the card index in the library, of science laboratories, of banking forms, and of charts of food values.

VIII. Each unit of work must lead to the development of desirable habits.

A unit of work which provides opportunity only for acquiring more information would be thought undesirable. Each unit must give the child a chance to grow in the habits which are going to be most helpful to him in his own child life as well as in the life of adult society. He must find in the unit possibilities for growth in personal and group responsibility, initiative, coöperation, good judgment in proportion to experience, economical methods of study and work, power to plan ahead, intellectual interests, open-mindedness, fair play, courage in self-expression, creativeness, self-direction, and sympathy and kindliness.

As we point out in Chapter VII, we can only claim that we give a great many opportunities for the practice of desirable habits. It seems safe to say, however, that where a thing is largely practiced some increase in its fixation as habit will result.

# CHAPTER IV

## TEACHING TECHNIQUE

Given now a real school the life of which is not unlike real life with its responsibilities and opportunities, and also a set of criteria for the selection of units of work which shall form the basis of the curriculum of such a school, what kind of teacher must be found to work in it and what will be her technique?

The teacher must be wide awake in sensing the educative possibilities in any experience of the child. Large demands are made upon her intelligence, her knowledge, and her skill. Normal child activities must be allowed their best development through the provision of an environment which gives them an opportunity for expression. The teacher must be able to help the child build upon what he now does, so that he comes to feel an urge to go forward in his acquiring of additional meanings from the different parts of his environment.

The teacher must first of all have lived richly in books, in travel, and in life enjoyments in order to give culture richly to her pupils and in order to help them arrive at meaningful generalizations. She should be experimental and creative with materials and ideas. Her own cultural background must be full in its content and significant in its meanings.

Facts themselves may be very entertaining, but they are not educative unless they help the child meet his needs and stimulate further creativeness. The teacher's information should be broad and thorough, but it should also have been learned in such a way that it is possible to reassemble it about some element of the child's experience in order to make the experience more meaningful to him. If pupils become interested in making a school magazine and later carry that interest over into finding out about the history of books, of libraries, and of printing, and about all the efforts of man to make and preserve the records of his race, the teacher should be able to assemble and integrate her information from ancient, medieval, and modern history, literature, art, and science.

In the future elementary teachers should have specific practice in developing the information and the series of activities which can appropriately be used in connection with any unit of work. From such preparation they will be much more able to select the particular body of facts which should be used with any unit of work under stated conditions of pupil grouping.

In the very beginning of work with broader and more meaningful units the teacher should maintain an open-minded attitude toward any assembling of material and information. At first she may not sense what can be used. A long period of research on her part may be necessary to cull from all that could be learned about paper-making that which will be most suitable for sixth-grade children. Only through maintaining an open mind as to the educative possibilities of such a unit as banking in the fifth grade will the teacher discover its strength or weakness as curriculum material. As the unit grows, facts take new relations; the Banking unit becomes richer when a savings department is added; whether the addition of such a department is educative for the group of children is answered only after long and patient trials of materials and methods. The whole attitude should be experimental and thus growing.

Not only should the teacher's information be wide and active, but she should have a farseeing understanding of child nature. Any minute of the day situations may arise in which it is possible to build up valuable habits and sound information. Only as the teacher becomes at one with her group and with each individual in it can she truly fulfill her purpose of helping the child to widen his horizon and to see things in their true relationship.

Children differ widely. One may be consumed with intellectual curiosity. His whole life may be centered about ideas. Another may be practical and wish to work chiefly with his hands. Still another may be largely imaginative. Others may be dominantly social and get their best development through the social aspects of the work. The teacher will wish to see to it that every side of the child's nature is developed as far as possible, but she will need to know child nature so well that violence will not be done to special abilities or disabilities.

Teachers differ as widely as children do. The teacher who is consumed with intellectual curiosity should school herself to a sympathy with the less intellectual child. The teacher who is imaginative has a special contribution to make, but she should not neglect the other responsibilities which leadership of a class places upon her.

It probably goes without saying that a teacher's personality should be such that it enables her to approach the level of the children with whom she deals, at the same time keeping the detachment of an adult observer and helper who knows what can be done with each of the child's experiences.

Knowledge of all the cultural background of the race, understanding of child nature, and possession of a vital personality are only preliminary to good teaching technique. But good teaching technique cannot exist without them. They are basic. They are the marks of the integrated, well-balanced person which the teacher should be.

In addition to these basic requirements the teacher should use a very specific technique. The elements of that technique are (1) To give time for orientation. Teacher and group alike need time to sense and define problems which demand their attention. (2) To set the stage for the initiation and development of educative situations or units of work. (3) To work as a member as well as a guide of the class. (4) To select the educative factors in any unit of work. This insures maintaining a high standard of work and provides for the continuous growth of the child. (5) To do something with the facts and meanings which have been stressed. This doing may be dramatic, constructive, or intellectual — expressed, indeed, in any form of normal child activity.

## I. Period of Orientation

If the curriculum is to make use of child activity and child experience, if it is to be constantly enriched by the group, a period of orientation must be provided. Understanding between teacher and pupils must be secured. And it takes time to find out what any particular group of pupils is like. It takes even more time for pupils to find out what a particular situation is like. This period of orientation, of the sensing and stating of problems which have a common interest for the group, must not be hurried. Pupils will tell about what they have done in the vacation time, about trips, about things they have seen, and about their association with other people in group work. They will recall some of the outstanding work of preceding years. The teacher sometimes learns in this period of orientation what the pupils are yearning for or are playing or working at outside of school, and thus helps them carry it over into school and make it a more fruitful and satisfying piece of work. If the teacher enters into this and gives from her experience, the work of the new year begins to emerge.

## II. Setting the Stage

The teacher probably has known all along that she would like a particular kind of work done. But she wishes the pupil to feel his own worth and his own problems in any undertaking. So she has set the stage to call for the statement of the problems as she wishes her class to feel them. This means, of course, systematic planning but equally systematic willingness to wait until pupils can take over the plan or can present one which has equal value.

The setting of the stage may take place before the beginning of school through placing books, wood, boxes, paper, paints, animals, or other materials in the classroom. Pupils explore the material. They begin their own pieces of work. They draw others into them. The teacher may, however, have to modify or perhaps completely discard her prearranged plan and make an entirely new approach, better adapted to the special needs and interests of the group. One teacher had planned to approach beginning reading through the use of children's summer experiences on the farm and at the seashore. Two bulletins had been prepared with these headings: "Fun in the Country" and "Fun at the Seashore." Pictures and questions about gardens, chickens, cows, haying, swimming, digging in the sand, and boating were placed under the appropriate headings to stimulate the children to tell stories of their summer fun.

One group was to tell their summer stories while the other explored and looked at books. When it was gathered together, however, not a child seemed eager to share his experiences with the others. Those who were looking at books soon grew restless and, one by one, began to go back to their work of making boats, trucks, and wagons, painting pictures, and playing with farm animals and blocks. Those who were telling stories were eager to join the other pupils in their activities and were allowed to do so. The teacher saw that her group of children was much interested in the present and not in the past, in manipulative and play activities and not in oral expression. The work she had done in making her set-up for stories had gone for nothing, but she began anew and made other bulletins. The reading that she had in mind came not from the summer stories but from bulletins about what the children were making and playing.

Was the teacher wise to make a change? The interest in reading and oral expression which later resulted showed that she accomplished her purpose more effectively. The teacher was just as well satisfied, for her aim had been to stimulate interest in reading through the use of real experiences.

If the class, however, shows at once what it wishes to do, that is the place to begin, and the teacher's task for the time being is only to direct it so that it is growing.

But suppose that the group does not have well-defined notions or any notions. Suppose it has done only what some teacher or parent has said must be done, that it is accustomed to wait to be told; then the method to be followed in starting the work is to be found in one of these suggestions.

1. The pupils with the teacher make a survey of what they have to do during the year. They note the daily programs and the school set-up. What can be done about it? They talk over the work of previous years; they make suggestions as to things they would like to have or would like to do. Perhaps a little planning arises in connection with the rearrangement of the daily program or in connection with the smooth running of the school and the part which this particular group can take in it. This is the method of approach which will have to be made if the daily program is set in advance. When a first effort is being made in a school to make more use of pupil initiative and responsibility, this preliminary discussion of the school program and general method of work may supply the entering wedge. The skillful teacher begins here to show the pupils that she values their suggestions highly.

2. Leads for the center of interest may develop out of the experiences of the pupils during the summer. Pupils bring in their summer exhibits. They sit together and discuss what each individual has done, and through that others may get an inspiration. The farm unit in the first grade had its beginning in that way. A study of blue prints and one of fossils started from summer exhibits.

3. It is generally possible for the teacher to set the stage so that a particular unit of work is sure to arise. The list of available units for each grade should be large so that individual differences in teachers and children

may show themselves. The teacher must wait until the pupils have time to adjust their ideas and their plans to any piece of work. Time is not wasted if plans are being made, considered, rejected, or accepted. This time of consultation, of trial, of apparently no headway, is often the most valuable part of the whole year's work, for then the pupil begins to understand the teacher and the group, then he begins to lose himself in finding something to do; he begins to see that his ideas are valuable, and that a premium is put upon thinking. The teacher should not be drifting during this time. She should be watching for usable leads into the particular units or projects which she wants to have the class undertake. She will know whether the leads are usable from her knowledge of children, from her understanding of the demands of education, and from criteria which have been set up for the selection of units. Only if that is true may she set the stage for the development of particular units. The teacher then can set the stage, may do so, but she must not control all the thinking of the child or all the doing of the child.

How to set the stage for any particular unit of work will be determined by its content. It is self-evident that a unit centered around banks will be very different from one centered around milk or the farm. Each will require its own material, its own specialized room equipment, its own peculiar set-up for trips, exhibits, and organization of the class.

4. Still another method of setting the stage is for the pupils, with the teacher, to make a complete survey of the available school equipment. Library, books on shelves, tools, shops, opportunities for work of various sorts, playgrounds, wood, clay, paper — indeed, any

of the equipment which the school may have — will be examined and talked about. Its use will be explained and suggestions will be made about it by the teacher and by the members of the class. The best method to use in this exploring of the equipment will be to let the pupils work with it. Put a supply of wood, tools, clay, paper, paints — anything which is available — in the classroom and let the children go to work. They may at first make useless things. But something of value will begin to take form: a house, a boat, an engine, a toy, a bookcase — the list is interminable if the material is of sufficient variety. From some one of these the teacher or the group takes a special lead. Comments on the piece of work, its workmanship, its possibilities, its value as something for them to consider as a part of their own project, will be secured from the pupils. Time must be taken for this. And the teacher must not be the only one to make suggestions. Whatever the pupils say may become bases for further plans. Out of the equipment and its use may arise the center of interest, or unit of work, with all its growing details.

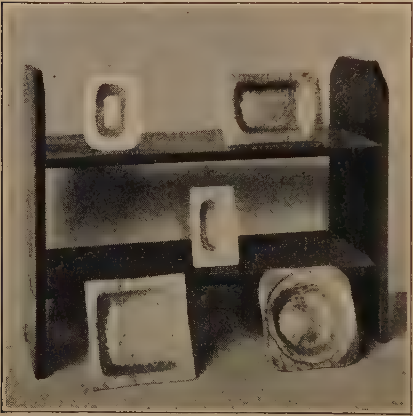
## III. Becoming a Member as well as a Guide of the Group

The teacher takes an active part in all phases of the work. She is not just the leader of the class in the discussions during which the unit of work is getting under way. She gives her summer experiences. She questions, suggests plans, and helps assemble material and information for class consideration. She and her pupils learn together as the curriculum grows from day to day under their combined initiative.

As a guide of the class the teacher will wish to see certain work habits and certain social habits develop in the carrying forward of any unit or project. She will want the pupils to question intelligently and to know how to find answers to their questions. She will want them to develop independence in work and self-confidence because they know how to judge the value of the product. She will want them to be courteous and respectful toward each other, toward her, and toward work and ideas. Because of the large amount of materials and equipment which are needed, she will want them to develop habits of orderliness in taking care of those things which they use and of coöperation with other members of the class in the use and care of such materials. To learn how to be an efficient member of a discussion group, taking part and allowing others to take part, requires real effort on the part of individuals. The teacher wants the pupils to know how to assume and to execute responsibilities. And, again, every teacher will want her pupils to have high standards of work, to undertake only those jobs which they might reasonably be expected to complete, and to stick at jobs until they are finished.

She should provide, then, an opportunity for the practice of any or all of these habits. She should see to it that the child becomes conscious of what he is doing and of the method which he is using. If, for instance, she wishes to develop the habit of asking questions, she should give her pupils a chance to ask questions, and if none are forthcoming she should herself show them how questions may arise. She should help them ask questions of each other. Of course she should take time to allow them to ask and answer questions. Such a part of her technique does not come of itself.

Again, suppose that she wants them to become appreciative of the good work which others do as well as of their own good work. She will call attention to good work. She will work with them and allow them to offer criticisms of her work. She will show work by others outside of the class; for example, pictures by great masters of painting, not only because they are great but because the pictures serve a real purpose in the active life of the child. The paintings of cows and of farm scenes by great masters are doubly valuable if they help the child build upon an experience he is actually having. The teacher will encourage fearless criticism if it is based upon sound understanding. Standards of work will be raised at the same time that this appreciation of good work is being developed.



STANDARDS OF WORK WILL BE RAISED

The shelf and the hammered Britannia metal were made by fifth-grade pupils

Healthy normal group life with the teacher as a real part of it is this third factor in teaching technique. Membership in a group and wise leadership of it must be combined in the teacher. As a member she will work with the pupils in any of their undertakings, assuming a just share of the labor for herself. As a leader she will be on the lookout constantly for ways to help the pupils to help themselves, for opportunities to increase skill in the use of all kinds of tools. She will make a clay bowl if the class decides to make clay bowls. She will help any child master the technique of coiling the clay for his bowl. A coöperating member! An expert leader!

## IV. Selective Ability

The variety and the scope of the activities, materials, and information which can be assembled about any unit of work are usually very extensive. In what activities should the child engage in connection with the unit? With what materials should he have experiences? What information should he retain?

The teacher acts as the selective agency. Not every experience is worth while. Not every one will end in value. The teacher helps with the selection. Indeed, one important qualification of the good teacher is this ability to select. The teacher who does not recognize that accurate and purposeful selection is necessary soon becomes lost. The very apex of nonselection appears in memoriter reciting of lessons. A move forward in teaching practice from such nonselective recitation came about with the selection of the central idea in the topic, of the main factors in the chapter, and of the theme of the whole book. These were steps in getting at the really educative part of the information under consideration. The use of large educative units such as are given in Chapter V of this book represents still more discriminating selection.

Large educative units of work can be made very meaningful to the child because they are actually experienced by him. They become a real part of his life. There is still great danger that every part of the unit will be treated as of equal value. It should be said again that the teacher must know what information, what experience, what meanings to select for drill and fixation.

Through these units of work it is possible to overstimulate the child just because of their richness in every kind of possibility for normal activity. The teacher must prevent this overstimulation. It is possible to let the equipment in the classroom become so prominent, so cluttered up, that the child becomes confused and cannot see the main trend of the unit or center of interest. The teacher must guard against this by helping the pupils to select activities which can be carried out in an orderly and clear way. It is possible for the child to find so many interesting things to do that he starts on several pieces of work almost simultaneously and does not carry any of them to completion. A part of maintaining a high standard of work is to carry to a satisfying end any piece of work which is started. The teacher must help the child to become selective. He will not then try more than he can do well. The teacher who has mastered this part of her technique will know when to limit the variety and number of pupil undertakings.

A significant feature of this ability to select properly is that which concerns selection among activities. In one fourth-grade class the pupils were happily and busily engaged upon a pottery unit. One day a girl brought to school six typewritten copies of a spring play which she had written at home. The play had possibilities, and the teacher and class took time to suggest additions in songs, dances, and plot. Original poems were written and tunes composed for them; dances were originated to represent the spirit of spring in the rain, the brook, the flowers, the birds, and the butterflies. Of course the spring play was successfully given. Through taking it over the teacher showed that she knew how to select the most educative activity. Within a few days, however, this same class gave a summary of their unit of work on the history of pottery, which had been only temporarily interrupted by the spring play.

Something happens to boys and girls when they see their own ideas accepted or built upon and put into action. Many whole group or small group activities start from the children at unexpected times. A good study of the Far North was suggested by the third-grade pupils because of their interest in the famous dash to Nome with antitoxin. Another third grade launched upon the study of animals of all lands because of their recent trips to the circus. Sometimes these spontaneous outbursts of desire for a special unit of study which are taken over by the teacher and the class take the place of any other activity upon which the class was engaged. At other times the two go along together. But through accepting the enthusiastic suggestion of the child and going to the bottom of the possibilities the teacher has been of real service to him.

The help which the teacher can legitimately give the child in doing his work is of various kinds. She may help him make plans, giving advice as to the practicability of the plans which he is considering. If he has no ideas she may suggest and talk over different possibilities with him. If his plan is already under way but he has reached the end of his own ability to progress, she will take his plan and help him go on from the point he has reached. She helps him overcome some of the technical difficulties which he is encountering, as in writing, in sewing, in reading, in using paint, or in using reference books.

A small amount of actual instruction is called for on the part of the teacher. What she does is first of all to set an environment so that child activities can develop. Secondly, she helps with plans and with the carrying out of plans. She provides for freedom under guidance. It is this wise guidance which is so necessary if the free-working school is not to waste the time of pupils. In the third place, she must be constantly on the watch to prevent waste of time on the child's part because of lack of skill which she can help him master. It is here that the need for formal instruction arises.

## V. Doing Something with the Work

As any unit is carried forward the pupils will be continually using meanings and materials in newer ways. Only in that way does the activity become truly educative. And through some kind of play with the different elements in the unit other elements arise. The children are playing with the houses which they have made for their play city. They find that they want the people to buy at a store. If there is no store the children will set to work to build one in order to make their play complete. Free dramatic play accompanies the development of a unit of work. Time should be given for more meaningful dramatic play with the fully developed unit. After a farm has been set up in the first grade the pupils should have time to play with it. They should be free to dramatize the relations of one part of farm life with another: take the cows to pasture, get the corn from the crib, take milk to the city, go to church, plow in the field, stack the hay, and converse with each other about farm affairs. All that and much more must be done before the true values in meanings come out of any center of work.

Either as a part of the progression of the work or as a summary it is desirable to give opportunity for a group of pupils to tell others about what is being done through preparing an exhibit of materials, giving an assembly program based upon it, making a booklet about it, or sharing it in some other way which may be devised. Through such summaries the desirable meanings become fixed, because they are used in situations which are real and which have demanded new and better organization.

In considering the units of work that follow, it will be seen how the teachers exemplify the technique which has just been outlined. In practically every case will be found (1) the period of orientation; (2) a setting of the stage to make use of pupil experience and initiative; (3) pupil and teacher participation on common ground; (4) selection among materials, activities, and information; (5) the use of information and generalizations through dramatic play, further construction, or meaningful summaries.

# CHAPTER V

## DETAILED DESCRIPTIONS OF UNITS OF WORK

### INTRODUCTION

These detailed descriptions of units of work serve three special purposes: (1) They show how the theories held by the members of the staff have actually been put into everyday practice in one school. (2) Teachers who wish to make use of child activities and of environment and common experiences as a part of the school curriculum will find descriptions of how it has been done. If they wish, they may follow the units of work as outlined. They may be able to save time for themselves by having the list of activities and materials ready-made. (3) Other teachers may consider these merely as suggestions for the working out of the same or similar units. This is by far the most desirable use of the descriptions, since the pupils in different environments vary greatly.

Through an analysis of any one of these units the teacher will be able to see how much she should know in advance. As has been said, her preparation in information should be particularly broad. It is very difficult, almost impossible, for her to gain her information as the unit progresses. She should know the field of subject matter as it spreads out from any unit of work which may present itself to her class. In her analysis of any one of the units she will receive additional help as to a satisfactory technique to use in its development. It is felt that our best contribution will be to provide a guide for other teachers in their development of normal, growing, significant units.

## *FIRST GRADE*

### ANIMAL LIFE ON THE FARM

#### *Selecting the Unit*

With this less mature group of first-grade children, the field from which to choose a unit of work was somewhat limited. The life of most of the children up to this time had been the quiet, simple, regular life in the home with their parents and, if they were so fortunate, with their brothers and sisters and possibly a few outside playmates.

The children of this class had just come back from their summer homes or some summer experience in the country. Many of them had lived on or near farms. They were all familiar with at least some phase of farm life. "Life on a farm" seemed to evolve of itself as a unit of work, coming directly from the recent summer experiences.

"Life on a farm" offered rich possibilities, filled as it is with simple pleasures, with plenty of work and play, with interesting animals, and with fascinating growing things. It was an environment that could not fail to make an appeal to any normal child. To find out how much the children did know about farm life, to build upon the knowledge they had, to enrich and fill it out, proved delightful to both child and teacher. Things the child had only half noticed or had taken for granted took on new meaning and came to his remembrance just in time to make a contribution to the discussion.

This unit helps the child understand life about him. And finally he gradually becomes more conscious of himself as a member of a social group because of his contributions, both material and intellectual, to the unit, because of his part in the play connected with it, because of the help he gives as well as gets.

This particular unit came about naturally. On the first day of school the teacher had printed on the bulletin board

Good-by, summer fun.
Here we go to the Lincoln School.

At the top of the bulletin were three little sketches — one of the mountains, one of the seashore, and one of the farm. From each sketch ran a path down which children were skipping and running. At the bottom of the bulletin was a photograph of the Lincoln School.

The picture aroused much interest. From the very first it called forth the desire from the children to tell about their own summer experiences. As each told the group where he had spent the summer his name was printed beside the proper picture. The children not only talked about the places where they had been, but they brought snapshots of themselves — bathing, rowing, playing in daisy fields, playing with their friends and their pets. These pictures were posted on a special bulletin board; and all through the days that followed, the children stopped to enjoy them and talk about them.

The following week came a new bulletin which asked

How did you come?
By train?
By boat?
By automobile?

The children's names appeared in the proper spaces.

From the first day the pupils had played with the big construction blocks. Some made little inclosures which they called homes, and there they carried on home life. Others made inclosures which they called farms. They used the toy animals to make their play with the farm effective.

After hearing about the various country experiences and about how they had traveled to the city, a group of five boys, with one of them as leader, decided to make a big boat with blocks. They worked hard every free period, building and rebuilding the boat day after day, until it satisfied a certain standard which they had set. It was a piece of coöperative work which was rather unusual with so young a group. It was a large boat, stretching entirely across the room, large enough to hold the class of seventeen children. In the cabin chairs and tables and books were placed. The boat was complete and satisfying and the dramatic play was real. But the boat had to be taken apart because others wished to use the blocks, and almost immediately a boy announced, "I am going to build the farmhouse in Canada where I visited." He was the acknowledged leader of that plan, and after much the same kind of delightful coöperative labor a six-room farmhouse was built. The question of what to put into it naturally followed. This question started what proved to be the next fascinating and engrossing problem for weeks to come: making furniture for the house, and making it big enough for children themselves to use. It was a very comfortable farmhouse when finished, furnished with chairs, tables, beds, rugs, dishes, bookcase, couch, footstool, closet, kitchen sink, ironing board, bathroom, and — the crowning success — a grandfather's clock. The Farm Home unit — the first of the three included in the larger farm community study — was complete, and the play for the weeks following was most interesting. It reached a climax when a little girl on her birthday made cocoa on a little electric stove in the kitchen of the house and served it to the first grade and to one of the second-grade groups. The Christmas holidays intervened, but the play had been so real that it continued after the holidays. The children rebuilt a similar home, and always a group was ready to

IT WAS A VERY COMFORTABLE FARMHOUSE

The farmhouse was made of blocks by pupils of the first grade. The brick walk leads to the barn go on with the play. Then one day someone remarked, "Isn't there anything besides a farmhouse on that farm?" "Yes, lots of things," a boy replied. Thus was the class launched upon a second unit growing out of the first.

Around the room were pictures of farms and farmyard animals, books with farm pictures and farm stories, toy animals — all of which the children used.

Trips were taken to the city farm on the east side of Central Park and to the sheepfold and green meadows on the west side of the park. Gradually the play of home life had a new element added to it. It became home life with animal life added. At this point a boy brought in three magazines filled with pictures of country life and of animals. This suggested scrapbooks to one of the pupils. These scrapbooks, one for each kind of farm animal, brought coöperation from the entire class. Every day someone made a contribution, and one girl made almost daily contributions. One day at the mid-morning lunch a boy remarked with great earnestness, "I think we ought to study the farm animals." "Just what do you mean by that?" the teacher questioned. "Why just, for instance, take the sheep. We ought to find out about them, how the farmers cut the wool; all things like that." The group decided that it was a good suggestion.

The first thing was to appoint committees for the different animals. The committees were to have charge of their particular scrapbook. They were to build the shelter for their particular animal and to find out all they could about the care of the animals. Thus the class became deeply involved in the study of farm animals. Before the close of the year the class went gradually from the animal unit into the "farm" as a complete thing, with trees and fields, meadows and gardens.

### *Information about the Animals*

The pictures brought in by the children, the poems and stories that were selected, the bulletins that appeared from time to time, the trips, the questions, the difficulties encountered in building the shelter for the animals, all brought up many problems to be discussed.

Among these problems was the question of how big to make the stalls for horses and cows. The answer was that they must fit the animals that were to go into them. Then came the question of where to secure animals to put into the buildings. The fourth grade answered this question for the class in a way which brought about coöperation between an older and a younger group. The first grade found out that the fourth grade were making just the kind and size of animals which were needed. They asked them if they would make some for the first grade. This necessitated a trip to the fourth-grade room to tell how many of each kind would be needed. This trip added zest to finishing the buildings, which the class was eager to have ready by the time the fourth grade finished the animals.

While they were making the cow stable out of a box the class discussed the kinds of floor laid in the best cow barns and also the kinds of ventilating systems. The pictures that were brought by the children often helped to answer these questions. The stanchions worried some of the children. Did cows need stanchions? Why? Could cows lie down with their heads in stanchions? It was discovered that stanchions were long enough and suspended by chains so that a cow could be comfortable either standing or lying down. This was verified when the class went to the dairy farm on Long Island.

IT BECAME HOME LIFE WITH ANIMAL LIFE ADDED

The first-grade pupils are playing with their farm buildings and animals

Then came questions of watering the cows. One girl had seen pictures of drinking bowls placed close behind each stall in cow barns. The class found this also verified on their trip to the farm. The silo was another question. It was discovered, much to their disappointment, that the dairy farm close by was on land too valuable to raise its own silage.

The trough for pigs caused a lively discussion. Many plans were offered, and finally a girl said, "I have a picture of one in a book at home," and the next morning she brought it. Little by little the class solved most of the simple but meaningful problems connected with the shelter for the animals. Next they discussed the kinds of cows, pigs, and hens they ought to choose if they were farmers. The children had found out that there were many varieties of cows, pigs, and hens as they pasted pictures of them in scrapbooks, and a number knew something about each kind. The bulletins helped a great deal through starting discussions and renewing interest for further search.

Then came the problems of feeding the animals. There were certain definite questions to be answered. What were they to be fed? How much were they to be fed? This meant more study. The greatest help came from a talk with the farmer at the Long Island farm. The final steps were to find out about caring for the animals, about devices and tools and machinery to make work easier, and about the need for great cleanliness.

At this point letters were dictated to the teacher and sent to the fourth grade inviting them to see the buildings and hear something of what had been learned about the animals. The fourth grade in turn were eager to bring their animals to see if they did fit into the buildings.

THE FOURTH GRADE IN TURN WERE EAGER TO BRING THEIR ANIMALS TO SEE IF THEY DID FIT INTO THE BUILDINGS

Fourth-grade and first-grade pupils are here seen working together

There was almost breathless excitement while a fourth-grade child opened stanchions and slipped the cows' heads inside. "They do fit," the classes exclaimed.

The steps taken in developing the unit were as follows:

1. The decision to add barns for horses and cows, sheepfold for sheep, etc. to the farmhouse.
2. The appointment of committees to take charge of the different animals and find out all they could about them.
3. The help and coöperation of the fourth grade.
4. The actual work and play connected with caring for the animals on this miniature farm.

### *Outcomes*

*Information.* The children came in contact with a great deal of interesting and valuable information about farm animals: how to choose them, house them, feed them, and how to make them an asset to the farmer.

*Reading.* In this less mature first-grade class no particular stress was laid on learning to read. The unit gave them an opportunity to read, however, because the pictures and stories in the bulletins, which were prepared weekly and later daily by the teacher, told them the things they wanted to know. In some cases the bulletins showed contributions which had been made by pupils; for example:

> "Who will build a house for the hen?"
> "I will," said Frances.

The bulletins were written by the teacher, but they were in every case founded upon some actual experience or some question or discussion raised by the children. Thus a vocabulary was built up step by step. Flash cards, farm games, and puzzles gave the necessary drill. "Guess," said the first-grade child to the industrial-arts teacher, and from a card he read:

It is a farm animal.
It has horns.
It has four stomachs.

In the cooking room the farm products were cooked, and the child was given a copy of the simple recipe, which was usually read and used in the home. Records of trips and simple poems put on the bulletin board increased the skill in reading, but more than all else they made the pupils want to conquer the skill in order to find out new things.

*Writing.* Although children of this age are not expected to do much writing, they gradually did make a definite beginning. Manuscript writing was used. First they learned to write their names on the blackboard, and then to sign their names to pictures they sent to sick and absent children; finally they could send simple invitations to other grades and to their mothers and could write little messages with the pictures which they sent to absent children and letters of thanks for pleasures that came during the year.

*Literature.* The unit provided an opportunity for hearing good poems and stories selected with the purpose of enriching the unit as well as for the purpose of setting standards of judgment. Gradually the children learned to express themselves more clearly and more easily when relating some personal experience or contributing to the recording of a group trip. They grew expert in seeing and acting out dramatic elements and dialogues in stories which were told to them. The last half-hour of the morning was given to this phase of work.

*Science.* "Life on the farm" was full of most suggestive science material and information. It brought up many opportunities for personal reports and investigations. Getting water to the faucets and its disposal in the kitchen brought out a worth-while discussion. The children knew water cannot run uphill. One suggested having a man stationed to draw it up with a bucket. With some help they found it would have to be up higher than the faucet. "Get a bucket," said a boy, "a big bucket. Fasten it high on the wall, then the water will run into the faucet." Clouds, rain, sun, frost, all came into the discussions and were explained up to a certain point. A bulletin had been set apart for contributions and reports that helped to solve such questions.

*Number work.* Although very little was done with numbers, there were many opportunities for counting by ones and twos, counting children, lunch orders, chairs needed for visiting grades, etc. Recipes involving some further use of numbers and plays that came in connection with supplying home and farms are but a few of the situations which furnished simple number problems.

*Geography and history.* Quite often during the progress of the unit the class slipped off into the beginnings of geography and history. Discussions about the position of their homes in relation to the school or the homes of other members of the class, about the trips into the city and to the farm, and about the story of Boris in the "Here and Now Story Book" carried over into a little map-making unit. The pupils worked out on the floor a block map of the city. They put in streets, high houses, and rivers. This gave opportunities for play and construction into which the whole group entered.

*Household arts.* The unit furnished many occasions for cooking. With this group it was always something very simple, such as apple sauce, baked apples, baked potatoes, buttered peas and carrots, simple soups, and simple desserts such as junket, custard, and rice pudding. Something from every department of the farm was cooked, and a simple lunch for the mothers was prepared before the end of the school year.

*Fine arts.* There was ample opportunity for joyful expression on the art-appreciation side: (1) in painting large pictures of things in which the children were most interested; (2) in drawing and painting holiday cards, and pictures that told a story; (3) in using clay to make dishes for the farm home — drinking bowls, flower bowls, clay animals; (4) in learning something of design while making covers for books and designs for rugs for the house.

*Industrial arts.* The pupils had many experiences in handling tools and materials, such as clay, wood, cloth, woodworking tools, sewing tools, paints and colors, which helped to interpret their play.

*Music.* The music added much to the pleasure side of the unit. In the process of finding voices the children learned many simple little songs which enriched the program. They also learned to make up words and tunes for plays.

*Physical education.* The physical-education department aided greatly by keeping in touch with the progress of the unit and helping children to work out rhythms that added much in the dramatization of farm activities.

*Desirable habits of thinking and acting.* Throughout this activity the occasions for developing right habits were numerous. In building the big boat the five or six boys worked very happily together with almost no friction, but it was another thing to share the pleasure with the rest of the group who had not done any of the work. It was their boat, and it was several days before they really welcomed others in the play.

In the coöperative furnishing of the home there were a number of heated discussions in selecting colors of rooms and in arriving at agreement to paint a particular contribution to the house so that it would harmonize with the whole. The gain showed plainly when the house was complete and the play began.

"Jean will be the mother. Peggy, you be the cook. Gustav, you be the doctor; you can come in the airplane you made. We will need someone to bring in the groceries." There seemed something for everyone to do.

The children soon began to feel the need of responsibility for their own things or their particular duties. "I can't find my smock," was the cry of one child ready to paint a piece of furniture. As that was a prerequisite to a painting job, he found he had to see that his smock was in the right place. "We can't find the screwdriver," said another. It had been hurriedly dropped behind the tool rack. The trough of the pigpen was lost because a girl had not put it inside the pigpen when she stopped working; so she had to do the work all over again. Not only was there opportunity for taking care of belongings, but there were many opportunities to do a responsible errand. "John, will you go to the shop and get a box which you will find in the closet? It is just what Frances needs for her henhouse." John thought he could if another boy would go with him. Next time he was perfectly willing to go by himself and get a can of turpentine. Going up to the cooking room to get the food which the class had cooked and to bring the right number of spoons was another job for other children.

### *Meeting Individual Needs*

Some children could always contribute much to any discussion, but others needed the chance to learn to express their ideas. In a unit of work there is always great possibility for leadership and also great danger that some will be satisfied to let others take the burden of responsibility while they reap the benefits. While others were working busily to make the house complete, one girl had worked day after day on the same sort of crude table for her own personal pleasure. The day in which she added a splendid library table for the living room was an important step in her development. It was of equal importance when another girl only slightly interested in making a house, but eager to live in it, presented a lovely little sunset picture to hang in the farmhouse.

Hand in hand go the two processes: giving leaders a chance to lead and seeing to it that those who are not so outstanding are given a chance to feel themselves a vital, constructive part in the life of the group. Personal interest in each individual member of the class on the part of the teacher and the coöperation of parents play a large part in any successful outcomes.

### *Primers used in Connection with the Unit*

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GROVER, EULALIE O. Overall Boys. Rand McNally & Company.
HARDY, MARJORIE. Surprise Stories. Wheeler Publishing Company.
HARDY, MARJORIE. Wag and Puff. Wheeler Publishing Company.
MITCHELL, LUCY S. The Here and Now Primer. E. P. Dutton & Company.
TIPPETT, JAMES S. The Singing Farmer. World Book Company.
Bulletins arranged by the teacher.

## *FIRST GRADE*

### A STUDY OF COMMUNITY LIFE WITH THE BUILDING OF A PLAY VILLAGE

#### *Dramatic Play*

It is morning in the country. The farmer clumps down his narrow stairway and goes out to feed his animals and milk the cows. The mother calls the children to get up and come to breakfast. A train is heard tooting in the distance. The farmer hurries to the station in his truck, into which he has loaded his milk cans. The milk cans are piled on the train, and the train puffs away toward the city. From a farmhouse at another side of the room a truck loaded with celery, carrots, beets, and potatoes rattles along over the Queensboro Bridge till it comes to the big market. The trucks are sometimes sketchily constructed — a wheel drops off or a side gives away with too great a load, but the enthusiasm of the driver never fails.

On reaching his destination, wheels are pounded on again and sides hastily restored. The milk cans are cylindrical blocks, and the vegetables are apt to be made of clay and painted with brilliant colors. The Queensboro Bridge is built in the interests of the present moment, and may be of blocks or of three pieces of wood nailed together. A blue-paper East River, where there are sure to be tugs and barges and boats tooting up and down, flows underneath.

Woodsmen may be over in the forest chopping down the cardboard trees. Farmers' wives take their butter and eggs to the country store and get flour and sugar for their households. The mailman starts on his rural delivery. The children go to school, or start off to picnics in the homemade wagons, or get lost. Sometimes a circus comes to town; a grandstand is quickly erected and filled with boys and girls and fathers and mothers. Then a loud voice is heard solemnly announcing, "Ladies and gentlemen, this is the cow that jumped over the moon." Loud applause for the high jump, and the play goes on.

### *Houses for the Village*

Virginia becomes dissatisfied with her house that is built of blocks and easily pushed over and disarranged. "I want to make a house," she announces. A box is hunted up in the basement or she gets one at her grocer's, and soon one house is started, then another and another. After a while nearly everyone is making a house, barn, garage, store, hospital, market, or theater. Tables, chairs, beds, pianos, writing desks, radios, kitchen stoves, clay bathtubs, and dishes develop, taking many hours of planning and a great deal of hard work. Bedclothes — sheets, blankets, comforts, mattresses, and pillows — are made for one bed after the other, some of them carefully finished, others put together with the least work allowable. Sometimes families of dolls — when they are not purchased — are made out of muslin or stockings and stuffed with cotton. Helen had made a scholarly looking man out of a stocking to live in her house, and as she was sewing away one day she said to the teacher, "Just as soon as I get him done, I'll make him a wife." Later there was a wife and child.

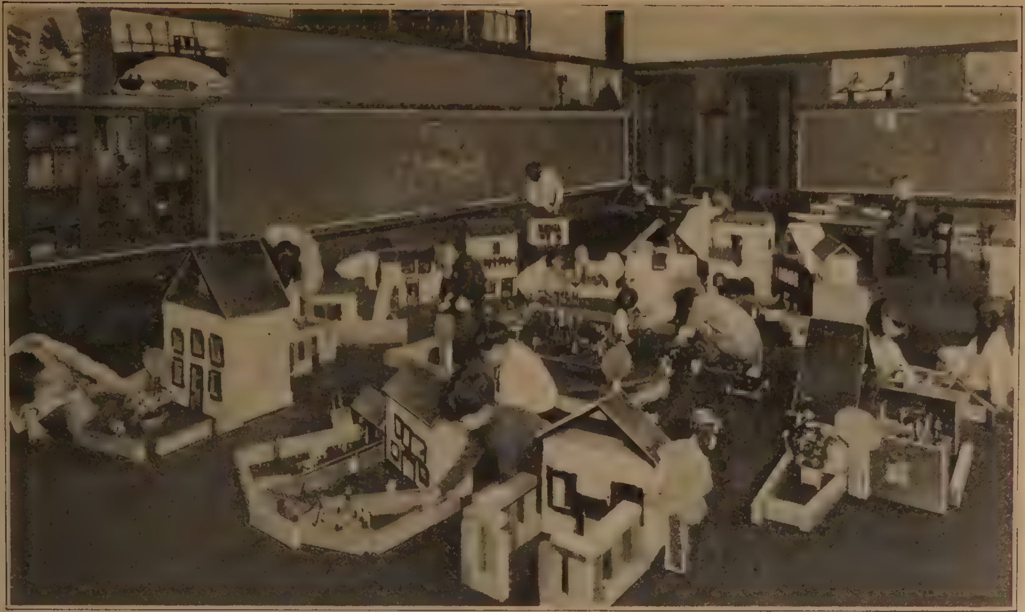
Rugs and hammocks may be woven too, and curtains hung at the windows. Some of the curtains are dyed or printed with sticks, or have designs painted on them.

Most of them are plain and unhemmed. Often side draperies and flounces at the top are thumb-tacked on. Sometimes a period is given over to consultation with the art teacher on color combinations for the different houses. Samples of various colored materials are tried out in combination with the furniture, rugs, and walls. After some experiments with magnets and electric batteries, houses and stores are wired and attached to small batteries, and electric lights are turned on.

Jobs are deserted by individuals sometimes when they prove difficult or the enthusiasm of the worker wanes, but the teacher plans to be on hand at such times to tide over the difficulty or to encourage perseverance. Sometimes also she must guard against too great persistence at one task. One day after watching Rutgers stick continuously for an hour and a half at a painting job he had on hand, she said, "I think you should stop now, Rutgers. Aren't you tired?" But Rutgers replied, "Tired? No; I'm happy."

Roger felt that he had contributed enough hard work after the making of a bare kind of barn with a few stalls in it, and he began spending his work periods in playing with his barn and farm animals. When questioned as to why he was not working on any house or furniture he said, "I do not need any. Jean lets me live with her." He also thought there was nothing that Jean needed that he might make. After a conference with Jean and the teacher, however, he started making a wagon for the combined use of the two families.

With all this building going on, however, the dramatic play continues any time during the day that the children can salvage for it, whether a house has a roof on it or not, or even whether it has any windows or doors. Addi-



THE DRAMATIC PLAY CONTINUES AT ANY TIME DURING THE DAY

The pupils of the first grade are playing with their "Village." The whole play village is laid out on the classroom floor tions are constantly built on to houses, and renovations made. Mariette, who had made only a little one-room house, building on extra rooms with blocks as she needed them, suddenly jumped up and said: "I need another room for my house. I haven't any bedroom." She very soon had Betty Jo and Peggy helping her to cut out a side door and join another small box on to her house. Immediately she moved a bed, chair, and rug into the new bedroom and was in a state of great satisfaction.

Malcolm finished an attractive little house with balcony, only to find that the father and mother could not get up the stairs to the second story. He had not cut a large enough hole in the ceiling. He immediately started another house, planning on a much more roomy landing, and said that his family were much more comfortable. He moved his new house to the city and kept the first one for a country house.

### *Standards of Work*

Certain standards of workmanship are held up to the boys and girls while at work — the desirability of planning ahead, for instance. Some of the children respond readily to this. Others learn only by sad experience. Helen, who became the owner of one of the largest, best-equipped houses in the village, needed little assistance in planning. When a suggestion as to putting in more windows to provide a greater amount of light and air was given to her as she worked, she said: "No; I have to leave room on this side for the dresser. And I must have room for two closets on the other side."

Occasionally demonstration lessons were given by careful workers in coöperation with the industrial-arts or classroom teacher on the planning, measuring, and putting on of window strips, the making of chairs, tables, and beds, the building of stairways, or the more difficult task of putting on a roof. Group conferences were called as the need arose to discuss the correct use of saw and hammer, the selection of the proper kind of nails, and the providing of suitable support for wood into which nails were being driven. Severe criticism seldom failed to come from the class for the careless workers who drove nails in crooked and left them instead of pulling them out, or for the builders of tables and beds that "wabbled," or for the makers of crooked doors and windows, or for sloppy painters.

The teacher discovered that there were many different degrees of skill in the class. Some of the children were satisfied with any kind of truck that would function in their play. Robert was not content, however, until he had figured out a truck in which the front wheels could turn "as real wheels do." But certain standards of attainment were discussed from day to day, and an effort was made toward the continual raising of levels of accomplishment.

### *Trips*

Problems of shelter, of food, of the milk supply, of clean streets, transportation, lighting of houses and stores, were discussed daily. The main unit of study was on the food supply — fruits, vegetables, and milk. Trips were taken to a Long Island truck farm, to big markets, to the stores just around the corner, to a dairy farm and a bottling plant, to docks and across ferries, to storage plants, to freight stations, to a fire house, and to museums. Large picture maps of New York were used in tracing trips. Representation of trips often followed with block building on the floor, sometimes with the guidance of the teacher, sometimes not. Mariette drew a map of the drive to a Long Island truck farm. She started drawing it at the board by herself one morning when she was the first to arrive.

The following account of a trip to a big market was dictated to the teacher by the group and recorded in the class book of trips.

### MARKET STORY

We saw a lot of farm wagons in the Square. They were loaded with white-and-green celery, lettuce, orange-colored carrots, cabbages, potatoes, red beets, red apples, and red tomatoes. The Long Island farmers came over on the Fifty-ninth Street Bridge. A farmer from Long Island said he started at five o'clock the day before, and drove his wagon into Gansevoort Square. Then he went to bed and got up at three o'clock in the morning to sell his vegetables to the groceryman.

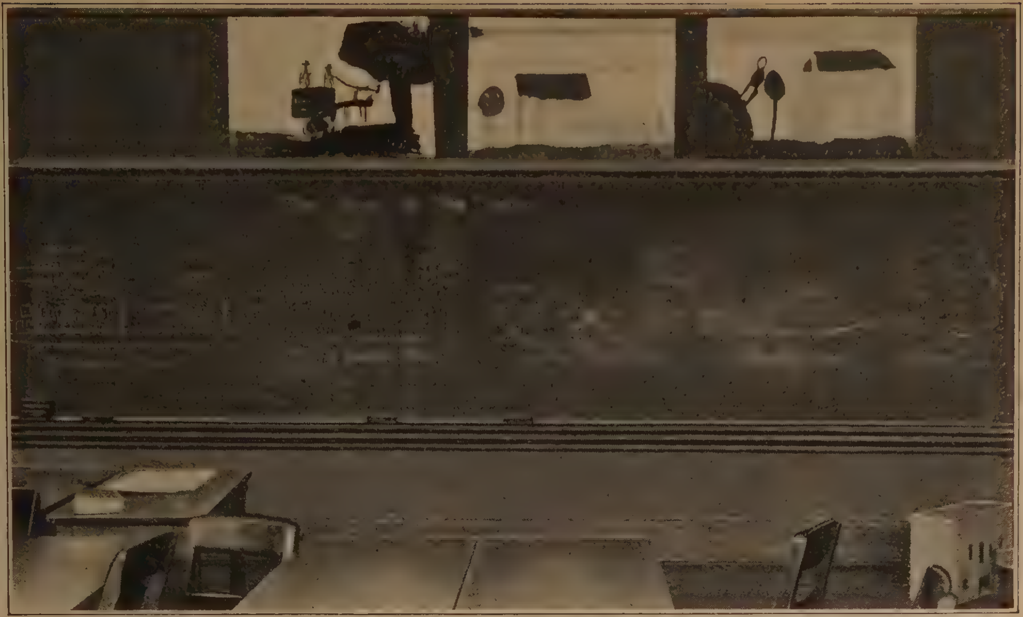
The way we found the refrigerator rooms we looked up on the top of a building and saw the sign. A man took us in an elevator into a cold room. The children said: "Oo, oo, oo, oo. It's cold. Look at all the butter." There were no windows. There was snow up on the pipes on the ceiling. There was snow on the door. Some of the snow on the door twinkled when the light shone on it. The man said the butter room was ten below zero. That was to keep the butter cold and sweet. It was so cold we went out as fast as the wind.

The egg room was very cold. It was not as cold as the butter room. If it were, the eggs would crack.

There were boxes on the sidewalk full of tomatoes and apples. Freight trains were standing right in front of the markets.

The refrigerator cars had big pipes going through the tops inside. These were to keep the cars cold.

We saw the steam engines pulling the freight trains around. Some of the freight trains came way from Chicago.



MARIETTE DREW A MAP OF THE TRIP TO A LONG ISLAND TRUCK FARM

The beginnings of map work. This first-grade pupil drew her map on the blackboard

The street cars were going "Dang, dang" along the street. There was a wagon full of chickens. The horse started to run away. The man ran after it and caught the horse.

There was a big steamer leaving, "Toot, toot," from the docks. It had tall masts. The docks were right across the street.

We bought some carrots and brought them to school. We paid 40 cents for them.

We cooked the carrots and ate them.

Miss W said they were the best carrots she ever ate.

The children all said "Yum, yum" when they ate them.

### *Written Composition*

The letter below gives news of the village:

Dear Roger and Paul:

Rutgers has finished his engine and one lumber car and one freight car. It brought in a load of lumber from down south on May 14. Then it is going up by West Point.

Helen S. has a new counterpane and tablecloth. Mrs. Radcliffe has a new baby. The baby has a cradle. The little mattress and comfort are purple. Mrs. Radcliffe did some washing today and hung the clothes out to dry. Then she took them in. When it came lunch time she put on clean clothes. The bedroom is all in pink upstairs.

Joseph is living out in the country. He is a farmer. He is living in Paul's house. He will pay him his rent when he comes back.

Scott made an engine with the coal car and lumber car. His engine will run through Play Town Village.

Barbara's baby has a new little pink dress. Her house is all nice and fresh.

Helen S. and Barbara and Helen M. made a big yard together out in the country. It is right by Mark's house. There is a stream running by. Across the stream is Mark's house.

Edward's theater is closed. Edward is working on an Indian play now.

Mark made a slide out in front of his house. His man can slide down awfully fast.

Hilda's house is finished. She is living in the country.

Would you like to stay at Enrique's hotel? He charges $2 a day.

We all cleaned our houses this morning. We swept our floors. We scrubbed our floors. We scrubbed the roofs. We dusted the chairs and tables and radios and bureaus.

We hung the bedclothes out on the line in the sun.

Now you should come back and see our village.

Love from the First Grade

### *Cooking and Science*

A great deal of cooking is carried on in connection with the food study: cooking of fruits and vegetables, soups, and all sorts of simple things with milk, such as custards, junket, and cocoa.

Health values of milk and fresh fruits and vegetables are discussed. Simple experiments in science sometimes follow questions that are asked in cooking or that come up in industrial arts about friction, balance, electricity. A weather record is kept; nature excursions are taken; and pets, such as hens, rabbits, and guinea pigs, are cared for. Grass seeds and bulbs are planted in the village park. The following account of an experiment with steam was dictated by the group. An illustrated account of it was put in the class book.

### THE CORK STORY

Pop! the cork flew out of the little test tube. It was the steam that pushed it there. There was only a little tiny bit of water. The cork flew out so far we couldn't find it. It made us jump. It made such a loud noise.

It sounded like a popgun.

Miss W said, "Now Mr. Cork, don't shoot at me." It went right off after she had finished saying the last word. Miss W found it afterwards in the flour bin.

### *Reading*

Weekly bulletins, in large manuscript writing, of trips, of the cooking experiments or simple experiments carried on by the class in science, or of news in the play village start the children out on reading and continue during the year, serving to aid in the organization of material and to keep centers of interest vivid. One of the first of the reading bulletins centered round a butcher and a lady who lived in the village:

Hugh made a butcher.
Helen made a lady.
"Good morning, butcher,"
said the lady.
"Good morning, lady,"
said the butcher.
"Please give me some meat."
"All right. Here is the meat."

The bulletin for January 10 was composed by the group working with the teacher.

*Monday, January 10, 1927*

Yum, yum! Yum, yum!
What good soup!
Let's make it again.
Potatoes! Celery! Onions!
Scrub! Scrub! Scrub!
Wash! Wash!
"Peel me!" said the potatoes.
Chop! Chop! Chop!
Boil! Boil! Boil!
Smell! Smell! Smell!
Put in salt and butter and milk.
Now taste the soup.
Yum! yum! So good!
All gone!

The following one came after Edward had given a successful puppet show in his theater:

Ring-a-ling, a-ling.
It is time to go to the show in Edward's theater.
Buy your tickets, people.
See, the curtains are opening.
The play is "The Rabbit and the Lion."
Oh, what a wild lion!
Roar, roar, roar!
The rabbit runs along so fast.
Hear the people clap.
Clap, clap, clap!
They like the play.

### *Number Work*

Questions of money constantly arose in the dramatic play in the village: the price of admission to the circus, the renting of theaters or empty houses or furnished rooms, rides on boats or trains, or prices of groceries. Joy brought a box of toy money from home and it was distributed and served its purpose more often in an indefinite rather than an exact way, although some of the children kept a strict account of it. Measurements constantly occurred in industrial arts and in cooking.

### *Fine Arts*

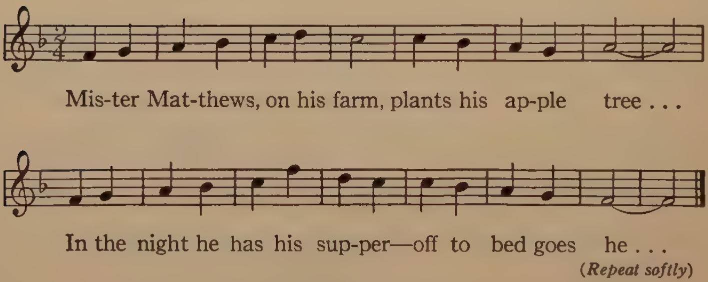
Much of the work in art centered round the trips and the content material. There were many large paintings of trees, houses, and barns, of cows and calves, of men at work in the fields, and of boats, bridges, docks, and trains. Some work in design came in making book covers for the copies of class bulletins, or in the stick-printing of curtains or decorations for dishes and furniture.

### *Making Plays*

The spontaneous dramatic play which continually springs up around the various centers of interest in connection with the study of community life develops into a thoughtful weaving together of information and impressions gained until a play evolves wherein the children compose their own rhythms and music and verse, construct and paint their scenery, and make their own costumes. One such play grew up around the study of apples, another around the story of milk, and one on the lives of chickens, following the care of two hens by the class. Some of the music and verse is given below:

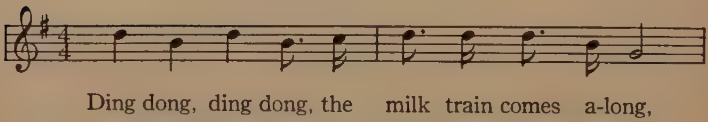
## A SONG FOR THE APPLE TREE PLAY

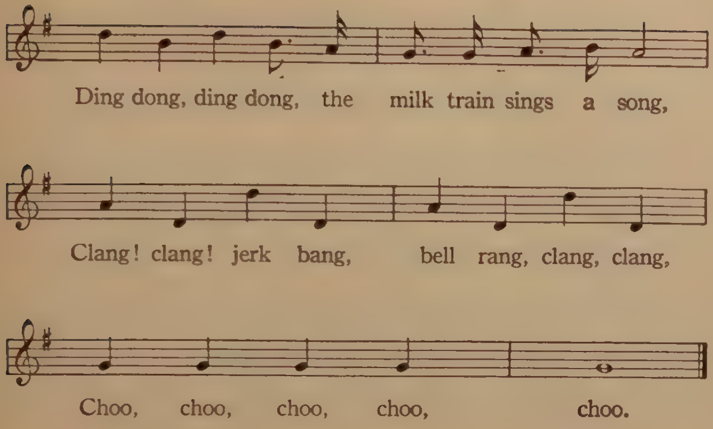
### Planting Song


Mis-ter Mat-thews, on his farm, plants his ap-ple tree . . .
In the night he has his sup-per—off to bed goes he . . .
(*Repeat softly*)

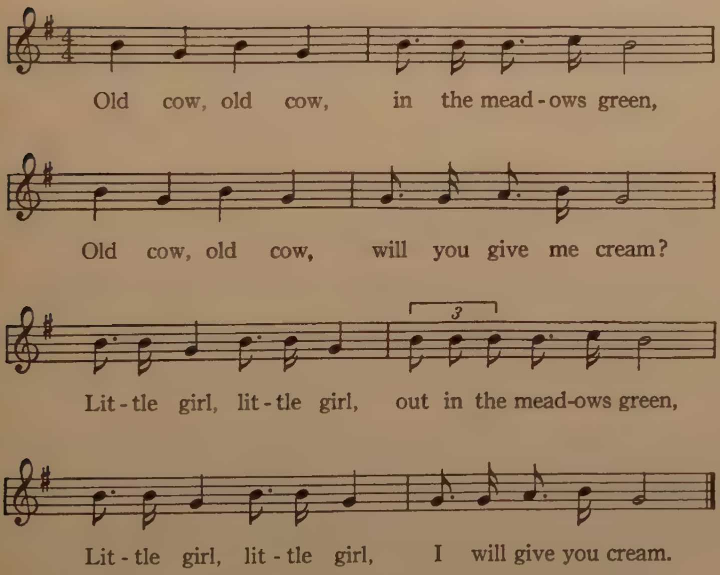
## SONGS FOR THE MILK PLAY

### The Milk Train




Ding dong, ding dong, the milk train sings a song,
Clang! clang! jerk bang, bell rang, clang, clang,
Choo, choo, choo, choo, choo.

### THE COW


Old cow, old cow, in the mead-ows green,
Old cow, old cow, will you give me cream?
3
Lit-tle girl, lit-tle girl, out in the mead-ows green,
Lit-tle girl, lit-tle girl, I will give you cream.

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## *SECOND GRADE*

### A STUDY OF CITY LIFE

The program of the second grade is centered in the building of a city and an intensive study of city life. This central activity and study has been chosen because (1) it extends and deepens the knowledge and experiences gained in the first-grade study of community life; (2) it is based on the natural interests of the children in their immediate environment, it is related to their needs, and it leads to an interpretation of city life and to an understanding of the relationships involved.

The first week of school all the children started to make trucks, trains, automobiles, busses, taxis, or boats. There were some large empty packing boxes in the classroom. One boy asked if he and another boy might have one of the boxes to use to make the Grand Central Station as soon as they finished their trains. Still another boy announced a few days later that his truck was meant for a mail truck and that he wanted one of the boxes for a post office. The other pupils had building schemes which were to follow the completion of their particular vehicle of transportation, and it was finally suggested by one of the children that "we first build the city and then build the country." During the discussion periods which followed, plans were made for constructing a play city. After all the things that collectively made a city were mentioned and their relative importance was discussed, the class decided to make the following buildings first, as "they will help the city people to live": wholesale market, grocery store, bakery, mill, apartment house, station, post office, fire department, hotel, and bank (which later grew into the Woolworth Building and was used for city offices).

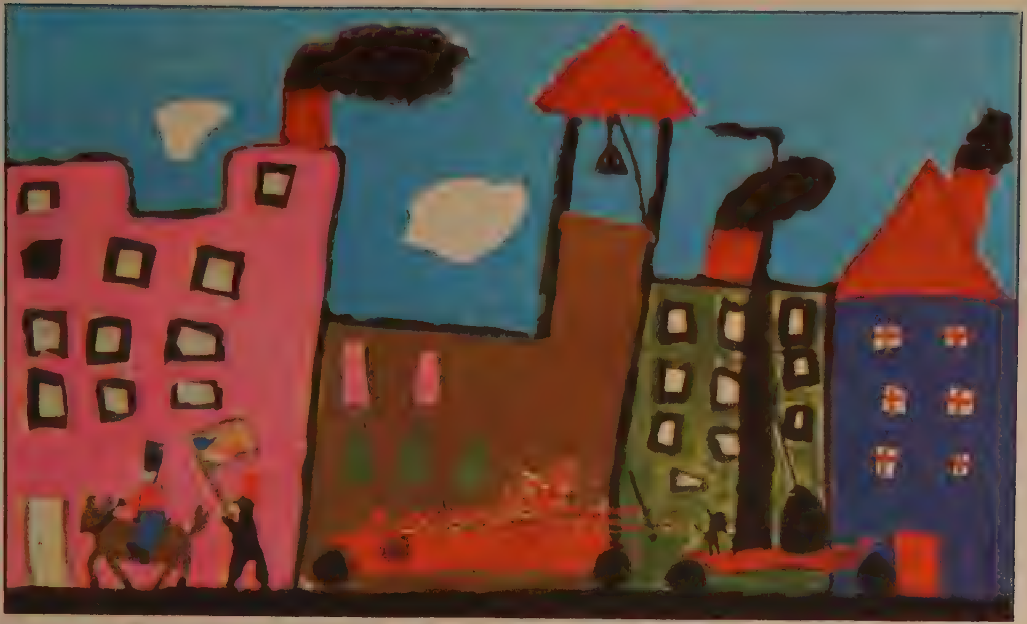
Small groups of two or three children worked together on a building scheme. The information picked up in the discussion periods, on the trips, and from the stories read functioned freely in the construction of the city and in the dramatic play centering around it. The city built by the second grade is not only typical of cities in general, but many of the buildings are representative of New York City buildings with enough of the outstanding characteristics to make them recognizable. At various times during the year as the building plans progressed, when questions or discussions arose over some particular phase of city life, when new information was needed to carry out the city plans, building schemes, or dramatic play, or when the interests and attention of the class were centered on some building because it had just been finished, furnished, lighted, inhabited, or opened for business, related studies on food, shelter, transportation, communication, or public utilities were carried on.

The city was buzzing with activity and business from its very first stages of incompleteness. Families of wooden dolls inhabited most of the buildings. Toy money was used as a medium of exchange. Prices of commodities were carefully considered, and correct change was insisted upon in most of the business transactions. All the rooms in the hotel and apartment house were rented long before these buildings were completed. Moving vans with household effects and families of dolls were frequently seen on the city streets or parked before one of the buildings, with tenants moving in or out. Protests and arguments were numerous between landlords or landladies and tenants over the high cost of rooms or apartments, whether or not the rent should be paid in advance, or whether rental charges should or should not cover the price of electricity and various other details.

The mill was the center of much activity. A small coffee mill was used for grinding wheat which was brought from a flour mill. Workmen at the mill made bags, ground the wheat, put the flour into bags, and filled the many orders that were received. There was always a job awaiting anyone who applied for work at the mill. Most of the deliveries were made by independent truckmen, and much bargaining was usually necessary before a satisfactory trucking charge was agreed upon. One careless truckman who had been hired by the miller to deliver five bags of flour to the grocery store left it at the fire department. After a very severe scolding the truckman promised to be more careful next time, but he was assured by the miller that his services would not be needed again if there were other trucks available. The wholesale market, which had been changed into a grocery store, sold clay roosters, hens, rabbits, ducks, turkeys, apples, bananas, oranges, melons, grapefruit, and vegetables which had been made, fired, painted, and shellacked by the children in the pottery room. It also sold wheat products, with which it was supplied by the mill and bakery. Approximate market prices were frequently quoted to the grocer by dissatisfied customers who felt that they were overcharged. One customer refused "to buy food at a grocery store that charges thirty-five cents for one apple."

Offices in the Woolworth were engaged the day that the construction was started. A sign, "The Bank of the Woolworth," was made and placed on the outside of the lower floor of the building. Other signs, such as "Bank Open," "Bank Closed," "Offices for Rent," "Woolworth Closed on Friday Mornings," were made and used as the occasion demanded. Money was deposited in the bank or withdrawn as the needs arose. Slips containing the name of the child and the amount of money withdrawn or deposited were demanded by the cashier of the bank. Sight-seeing trucks filled with dolls stopped at the Woolworth for a view of the city from the tower. The charge was "fifteen cents a trip for running the elevator to the top."

Tracks running into the Grand Central Station were laid, and passenger trains were running to bring commuters to the city. A newspaper stand was established in one part of the station, as the passenger traffic was not heavy enough to satisfy the owners of the Grand Central. The paper, published and sold for two cents a copy, was called *The City News*. It was issued weekly or semimonthly according to the quantity of news or the interests of the group. Items of city news were written by all members of the class during free periods, writing periods, or at home, and given to the editor in chief, who looked them over, corrected any mistake, and eliminated duplications. These were mimeographed in the elementary office and delivered to the city people, who read them with great interest.



CITY BUILDINGS

Illustrative paintings. Two pupils of the second grade painted this city scene

## *SECOND GRADE*

### THE WHEAT STUDY

A study of the source and transportation of the food supply of New York City was made in connection with the building of the wholesale market, the grocery store, the mill, the bakery, and the play schemes centering around them. The unit of work described here is a phase of this study of New York City's food supply and covered a period of six weeks.

### *Trips and Discussions*

When a boy decided to begin work on a mill for the city after finishing the Grand Central Station, he asked if a picture of a mill could be secured for him. He was given a picture of a flour mill and told that it was in New York City. He asked if the class couldn't go there on a trip, so that he could get some ideas for his mill.

This trip was planned for the following week. Before starting, the children were asked what they wanted to find out at the mill. The most important responses to this question were "Where the wheat comes from," "How it gets there," "How they grind it into flour," "How they make the machinery work," "If they do anything else besides grind flour," "What places they send the flour to," "How they put the flour into bags," "Whose this flour mill is, anyway."

The mill was located on the picture map of New York City, and one girl wanted to suggest a route from the school to the mill. She did this, with various suggestions from other children. A boy said that he thought the wheat must come by boat because the mill was on the

East River. Another said, "If it comes by boat I want to see what the wheat boats look like and how you can tell them from other boats."

The guide, who met the group at the mill, took them from the docks at the side of the mill, where they saw the boats with their loads of wheat which was sucked up by air pressure to the bins at the top of the building, to the different floors where the wheat is separated, scoured, crushed, sifted, weighed, and sewed into bags or made into cereals. The class went through the furnace room, where the firemen were shoveling coal into the furnaces to produce the steam that furnishes the power to run the mill, into the great engine room with its whirling wheels, which someone said "sounded like a giant snoring."

On the way back to school from the mill the children stopped at a temporary exhibit of a company on Broadway to see a small threshing machine actually in operation. The farmer was at one end feeding it small shocks of wheat, while the straw and chaff came out through the blower into a pile at the other end, and the grains of wheat poured from the side into bags. The children were keenly interested in the threshing of the wheat and in the little black engine that was running the thresher. They asked the farmer what he was feeding the engine to make it go. He told them that this engine "ate charcoal." He gave them one of the small shocks of wheat, which they brought home, threshed by hand, and ground into coarse flour with an Indian mortar and pestle. This trip led to discussions which lasted throughout the month on the modern and primitive methods of milling; the uses of wind, water, and steam as power for running mills; and primitive and modern methods of plowing, sowing, harvesting, storing, and transporting wheat. Breads, cereals, and other foods made of wheat, and the different grains and their uses were also discussed.

The week after the trip to the mill the class went to a bakery. The important questions raised by the children before this trip were "How do they shape the bread into loaves?" "Where do they get the flour?" "What mill does it come from?" "What kinds of bread do they make?" "What makes it rise?" "What makes the machinery go?"

On the way to the bakery they noticed two flour-mill trucks which passed. A girl said, "I think maybe those trucks are taking flour to the bakery where we are going." This proved to be the case. The class was taken to the various floors where they saw the sifting of the flour, the weighing of the ingredients, the mixing machine, the vats in which the bread was placed to rise, and the pans of dough going into one end of the big electric oven and the brown loaves coming out of the other. They saw the brown loaves wrapped by machinery, packed, and loaded into trucks. They went to the basement, where they saw the electric generators that furnish the electricity which runs the machinery of the bakery. Three freight cars filled with bags of flour that had just arrived from the mills in Minneapolis were being unloaded on one side of the basement of the bakery, and the two trucks which had passed were leaving their loads of flour on the other side.

The week after the trip to the bakery the discussions centered on breads: the particular brands used by each individual household; breads made from other grains; the superior quality of bread made from wheat; the breads of other countries; and all the people who help to make a loaf of bread.

A trip to a macaroni factory was arranged after one boy brought macaroni to school to add to the wheat exhibit, and another boy suggested that there be something about macaroni in the wheat play that was developing. The questions raised by the children, answered by the trip, and discussed later were "How do they make the macaroni into those long strings?" "What makes the holes in the middle?" "Do they use the same kinds of flour to make macaroni that they use to make bread?" "What things do they put in it besides flour?" "What mill does their flour come from?"

During this period of trips and discussions the children were drawing and painting wheat fields, threshing scenes, mills, wheat boats, wheat trains, farms, barns, and plowing scenes. Reproductions of famous paintings, such as "The Sower" and "The Gleaners" by Millet, "The Song of the Lark" and "The Close of Day" by Breton, "The Big Sheaf" by Gärtner, "The Harvesters" by Breughel, "The Watermill" by Van Marcke, "The Wind Mill" by Rembrandt, and "Peace and Plenty" by Inness, were from time to time placed in a conspicuous place in the room or used on the bulletin board with the original stories or verse of the children, which were posted in chart form as reading material.

The colorful pictures made the greatest appeal. There were comments on the color and a few questions and remarks about the content. The pupils were told that two of the pictures which had captured their attention were in the Metropolitan Museum and that the art teacher would go with them to see them sometime. This announcement was received with enthusiasm, and the trip was planned for the succeeding art period and proved to be a profitable and enjoyable experience.

These trips were all traced on the map of New York City, and picture maps were drawn by the children showing the location of the Lincoln School, the flour mill, the Metropolitan Museum, and the routes taken to these places. Familiar buildings and things seen on the way were located on the maps.

### *Films, Pictures, Exhibits*

A set of slides from the Museum of Natural History, "Farming in the Middle West," showing the modern use of machinery in the wheat industry and the primitive methods of plowing, sowing, reaping with sickles and cradles, threshing with flails, and grinding the wheat between stones stimulated much discussion and many questions. Three excellent films, "The Story of Wheat," were used frequently in the classroom and proved to be very valuable reading material. The children took turns operating the machine, while the others looked at the pictures and read the explanations between the pictures. At the first showing only the more advanced pupils could read these explanations. The less fluent readers became ambitious and worked very persistently on the reading during any odd moments, before school, in free periods, or while waiting to be called for at noon, in order to have a part in the reading when showing the films to a third grade whom they invited to come to see them. A boy brought in a dozen large photographs of wheat raising and harvesting and a picture of a large grain elevator which he cut from a magazine. These pictures were posted on the bulletin board and used as a source of reference and information while the wheat play was developing. A girl brought pictures of a combined reaper and thresher at work and a binder cutting a field of ripe wheat. She labeled them and added them to the bulletin board on wheat. Another boy brought an illustrated booklet showing that the cereal which he eats every morning is made of the whole grain of the wheat. He explained that the vitamins and iron were left in this cereal because the outer coats of bran and the germ were not removed, as they are in the white cereals.

After the trip to the mill the household-arts teacher gave the class a flour-mill exhibit containing the cleaned wheat, the partly ground wheat, whole-wheat flour, Graham flour, white flour, and farina. These were examined closely by the children. The differences between the various flours and their nutritive values were discussed. The following morning a girl came to school with a small jar of the whole-wheat flour, from which her mother makes bread. It was suggested that this be used as the beginning of an exhibit of wheat products. Other articles brought in were white flour, rolled wheat, cracked wheat, graham crackers, noodles, spaghetti, and macaroni.

One pupil surprised the children very much when he arrived with the macaroni. Another pupil "thought it grew in those thin, long stems." Another brought a picture map of New York City called "A Map of the Wondrous Isle of Manhattan," published by Fuessle and Coleman, New York, and pointed out the Lincoln School, the flour mill, and her own house in Gramercy Park. Still another brought an air map of lower New York which he had found in a Sunday newspaper, and which he thought "would help us on our trip to the macaroni factory."

A short time after the trip to the mill, where all the children had been told that they might fill their pockets with grains of wheat to take back to school, one girl brought to school a tiny tin box with one green blade of wheat about an inch high, which she had planted at home, pushing its way up through the soil. In a few days another girl made a similar contribution to the class, and other children reported that they had planted wheat at home and that it was beginning to grow. The teacher suggested that they plant some at school. Each child planted two grains in a large jar of dirt, and a committee was appointed to water them. They dug up a wheat seed frequently and examined it to see what was happening. They found them swelling, getting soft, and finally sending out roots and sprouts.

### *Cooking*

The work in cooking followed definitely the study of wheat and flour. Breads, muffins, cookies, and gingerbread boys were made, and cereals and macaroni were cooked. The recipes were read, added to the class books, and frequently used again by the children at home.

### *Science*

Questions raised by the household-arts teacher and the children while making bread were "What is yeast?" "Why does it make bread rise?" "What does yeast need to make it grow?" "Why does dough flatten out when it is kneaded?" "Why does wheat flour make better breads than flour made of other grains?"

In one experiment the class tied some flour in a cloth and washed out starch in a pan of water; drained off the water from the powder in the pan and tested the powder with iodine; removed the material from the bag and stretched and manipulated it to see how it clung together and how sticky it was; heated the ball of gluten in the oven and noticed the results.

In another experiment they dug up the wheat in its different stages, from the time the grains began to swell, to see the immature plant drawing the food supply from the starchy part of the grain during germination. The grains which were used for study were preserved in formaldehyde to add to the wheat exhibit.

### *The Wheat Play*

During the discussion period on the morning of the trip to the flour mill, one boy said, "Are we going to have an assembly when we come back from the mill and tell some other grade about this trip the way we told the fourth grade about bananas after the trip to the bananas boats?" "No," said another. "Let's have a play." "Yes," said one; "we had two plays last year, and the first grade asked us to see their play this year. Let's have a play."

When asked what kind of play they would like to have, one said, "We could have a play about wheat and have a farmer plant some wheat seeds, and when they grow up a train could take them to the mill, and the miller could make them into flour and send them to the bakery. Then some of the children could go to the bakery and buy the bread."

"Yes," said a girl, "and we could call it 'The Story of Bread.'" "And we could make up some songs and sing them while we are having the play," said a boy.

All the children accepted this first version of the play with enthusiasm. One day, after the trips to the mill and bakery, the teacher suggested before going to the yard that they play "The Story of Bread" during the yard period. This scheme met with approval, and each child chose what he wished to be. There was a farmer, a horse,

LET'S HAVE A PLAY

Scenes from the "Wheat Play." Costumes and scenery were made by the second-grade pupils for their play a wagon, three wheat seeds, the sun, the rain, a train, a miller, a truck, a baker, and two customers.

The farmer first stored his wheat seeds in the barn (a third-grade house in the yard). He then caught his horse, which was galloping round the field, and plowed the ground. He brought the wheat seeds out of the shed, loaded them on the wagon, drove the horse and wagon to the field, and planted the wheat. While the miller was patiently waiting for the wheat to be ground, he suddenly realized that there was no wind. He came forth into the wheat field announcing that he was the wind blowing the wheat and again subsided into the mill. The wheat came up very slowly. The farmer cut it, loaded it upon the wagon, and took it to the station. The train soon arrived and carried the wheat to the mill. The miller put the seeds into a box which he called the separator. One of the wheat seeds complained that the separator was too crowded; the wheat seeds were getting hurt. They were taken out of the separator and put into another box, which was called a bolter. They finally emerged from the bolter as flour. While these processes were being carried on, the baker came to the miller and asked that he please hurry with the flour, for his customers were waiting for bread. At last the flour was delivered by truck to the baker, who mixed it and put the dough into the oven. One of the loaves called out from the oven, "We are getting too brown; take us out. The bread is burning." The baker loaded the truck with the loaves of bread and delivered them to his customers. This same type of play, with variation of action and interchanging of parts, was repeated with great spontaneity and pleasure during later yard periods. The repetitions gave opportunities to review and fix meanings.

As the collection of foods made of wheat grew in number from day to day, a girl said that there were many things besides bread made of wheat. She thought we should have in the play other things to be delivered to the city people besides a loaf of bread. Others shared this feeling, and it was decided that the four wheat seeds should eventually change into a loaf of bread, a box of macaroni, a sack of whole-wheat flour, and a box of cereal, to be delivered to the customers by the grocer. There were many new names suggested for the play, as "The Story of Bread" was no longer sufficiently inclusive.

The suggestion "The City Gets Something to Eat" appealed to the majority "because it doesn't tell what the city gets to eat. It lets the people guess." One of the girls suggested that they ought to have something funny in the play.

A boy said, "Yes; one of the bags of wheat could roll away at the station, and the farmer could run after it." There were other suggestions, and great discrimination was shown by most of the children between the really funny suggestions and those that were silly. The first suggestion was the one finally accepted.

There was much discussion as to whether the children should represent the foods or real foods should be delivered to the customers. The decision was made in favor of having the children represent the food, "for we want the play to be funny; and if the people and the things to eat in the play are larger than the city houses, that will make it funnier."

Old songs about farmers, millers, and bakers, such as "The Miller," by Schubert, and "The Song of Bread," an old German folk song, had been learned and sung in the music periods.

Soon after the trip to the mill the children were reminded that if they were planning to have songs in their play they should begin making up the words, so that they could use their music periods to make the tunes and learn the songs.

"The Miller Song" was made up by the group, with various members contributing certain lines and others criticizing and offering ideas which they considered better, which in turn were criticized until the majority of the class was satisfied with the words. This procedure was repeated when the farmer in the play demanded a plowing song to be sung while he plowed his field. The idea of "The Wheat-Seed Song" came to a girl one morning before school when she was watering the growing wheat in the classroom. Three children were in the room at the time, and they helped to make up the words. Other songs for the play were discussed, and it was decided that a threshing song and a baker song were still needed. These were eventually made by the pupils.

A suggestion that the telephone conversation at the end be sung instead of "talked" met with approval. Three days before the play, when a rehearsal was being held, a need was felt for a "song of everything" to sing at the very end. This was made up and called "The Country-City Song," because "it begins in the country and goes to the city." The children took their original verses to the music teacher, who let them discover the meter of the song by swinging it as they recited the verse. Sometimes they discovered that parts of their verses wouldn't "swing" and they made their own changes. The music was made in much the same way that the verses were produced in the classroom. One child would start spontaneously and sing a phrase, to be joined by another child with his contribution or criticism, while choices were made between phrases until the song was completed. The music of all the songs was taken down as given by the children. The music periods were given over to the learning of these songs until the play was presented. At the beginning of the play the group orchestra, under the direction of one member of the group, played the march in D by Tschaikowsky with triangles, tambourines, and rattles.

Costumes and scenery were discussed and planned with the art teacher during the art periods. The truck and the country scenes, including the farmhouse, barn, trees, thresher, and tractor, were painted on wall board, sawed out, and mounted. All the children drew and painted pictures of these things first, and the best ones were chosen to be used as models for the large stage sets. The play city, which the children had been working on all year, was used as the city scene. The only change made in this was the temporary conversion of the fire department into a macaroni factory.

The wheat seeds cut their costumes from light-tan cambric, sewed them, and made high-pointed caps to look like heads of wheat. They made sacks of burlap to don as they emerged from the thresher, and white sacks to represent flour in which the miller sent them away from the mill. Cardboard costumes made to represent "A Box of Cereal," "Macaroni," and "A Loaf of Bread" were lettered and painted with various harvest scenes. Two children were the horse, one the front legs and one the hind legs. These two children drew pictures of horses until they finally produced one which satisfied them. Then a delightful costume was made to give the effect of the horse.

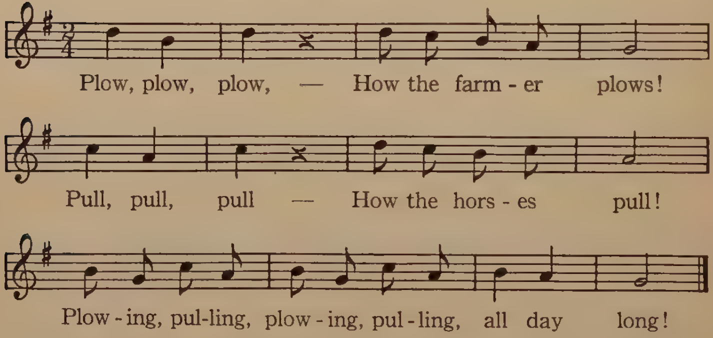
The four boys who had chosen to be the train decided to represent an engine, with one child as the smokestack, one the sand dome, one the bell, and one the cab. These ideas and drawings for the horse and train were presented to the art teacher, who helped the children to work out the details of their plans.

The following play was finally worked out and given for the second-grade parents and the children of the first four grades.

### THE CITY GETS SOMETHING TO EAT

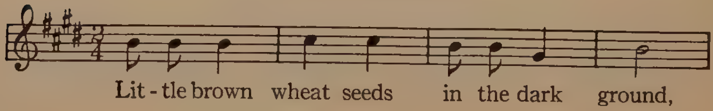
The farmer takes his horse from the barn and plows the ground while the group sings "The Plowing Song."

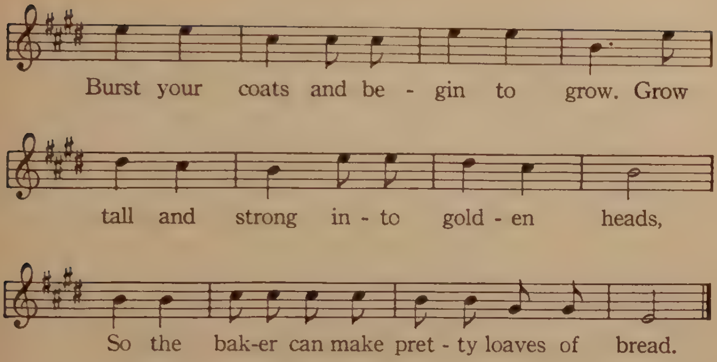
THE PLOWING SONG


Plow, plow, plow, — How the farm - er plows!
Pull, pull, pull — How the hors - es pull!
Plow - ing, pul-ling, plow - ing, pul - ling, all day long!

The farmer and his helper plant the wheat seeds, who curl up on their knees and then slowly unfold as the group sings "The Wheat-Seed Song."

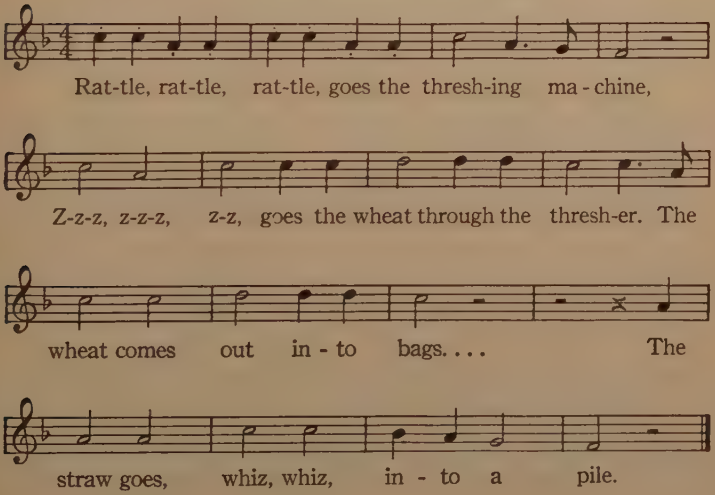
THE WHEAT-SEED SONG




Burst your coats and be - gin to grow. Grow
tall and strong in - to gold - en heads,
So the bak-er can make pret - ty loaves of bread.

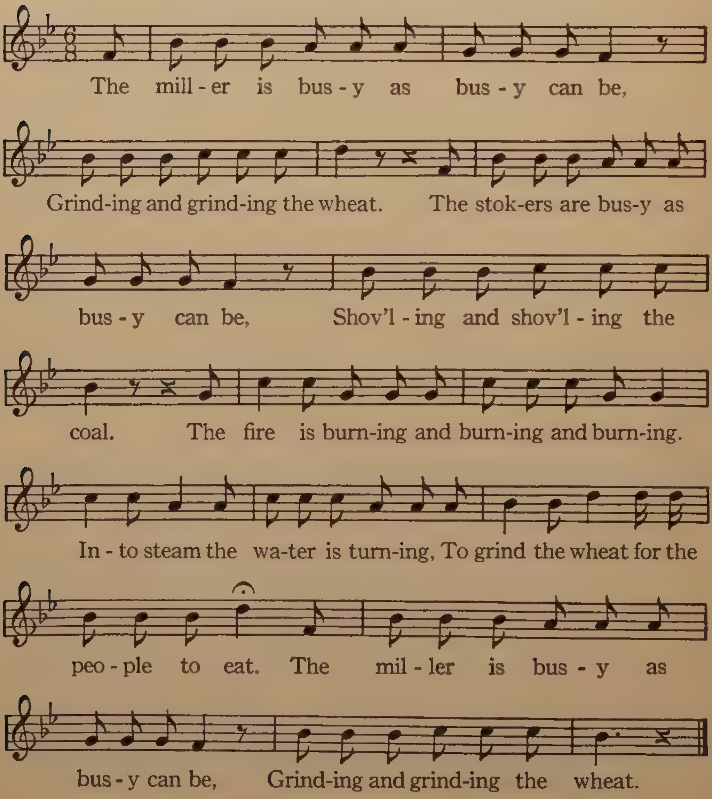
When the wheat is full grown and ripe, bobwhite and whip-poorwill calls are heard. The farmer and his helper drive the horse out into the field, cut the wheat, arrange it in shocks, thresh it, and put it into bags while the group sings "The Threshing Song."

### The Threshing Song


Rat-tle, rat-tle, rat-tle, goes the thresh-ing ma - chine,
Z-z-z, z-z-z, z-z, goes the wheat through the thresh-er. The
wheat comes out in - to bags. . . . The
straw goes, whiz, whiz, in - to a pile.

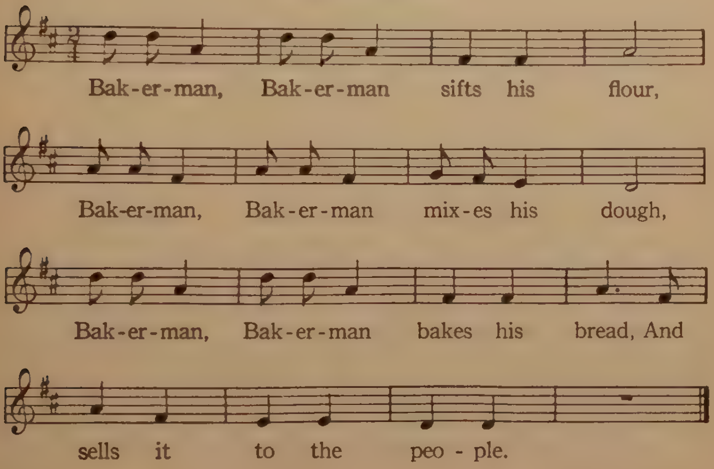
The farmer drives to the station with the bags of wheat jostling along behind the horse. He carefully places the bags on the station platform. One of the bags rolls away, and the farmer goes after it and rolls it back into position. The wheat is loaded upon a train which comes along and takes it to the mill. (There was an accident to the engine on the way to the mill; it quickly recovered itself and speeded on.) While the miller changes the wheat into flour and cereal, the group sings "The Miller Song."

### THE MILLER SONG


The mill - er is bus - y as bus - y can be,
Grind-ing and grind-ing the wheat. The stok-ers are bus-y as
bus - y can be, Shov'l - ing and shov'l - ing the
coal. The fire is burn-ing and burn-ing and burn-ing.
In - to steam the wa-ter is turn-ing, To grind the wheat for the
peo - ple to eat. The mil - ler is bus - y as
bus - y can be, Grind-ing and grind-ing the wheat.

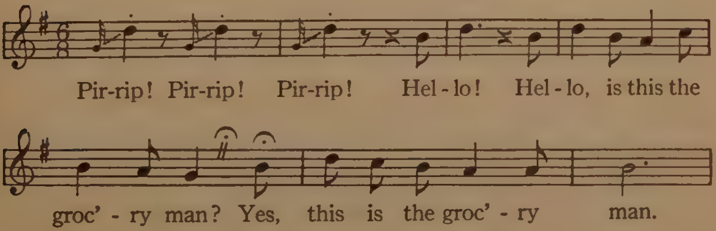
A truck comes chugging along to the mill. It is loaded with flour and cereal, which it delivers to the macaroni factory, the grocery store, and the bakery. As the baker changes the sack of flour into a loaf of bread the children sing "The Baker Song."

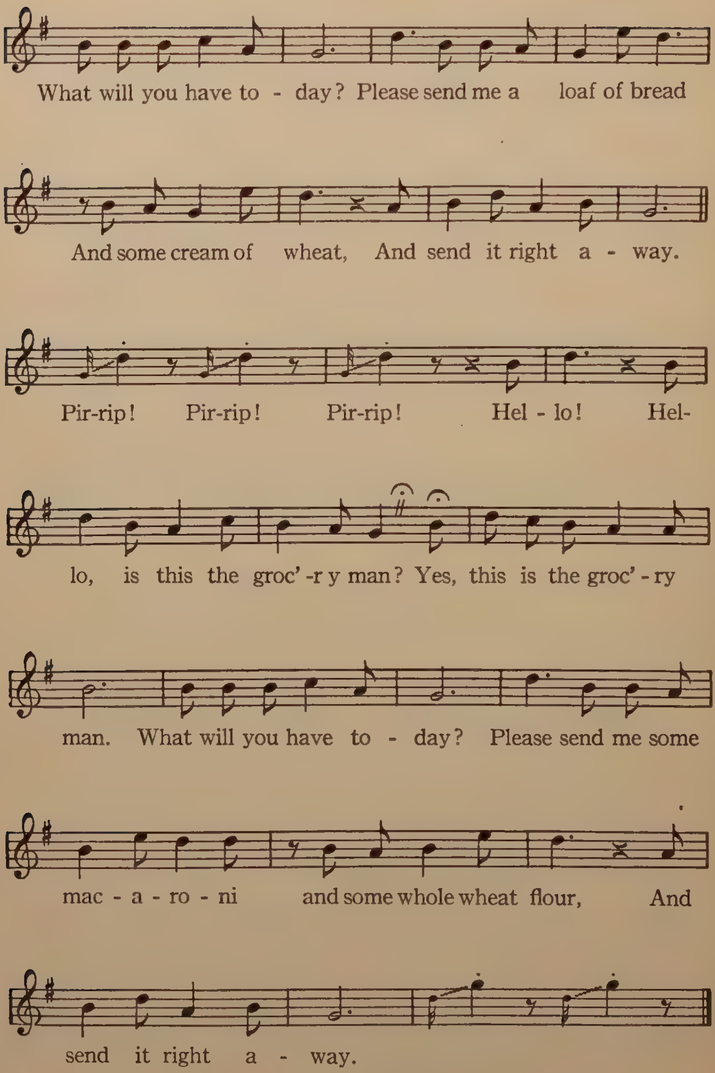
### THE BAKER SONG


Bak-er-man, Bak-er-man sifts his flour,
Bak-er-man, Bak-er-man mix-es his dough,
Bak-er-man, Bak-er-man bakes his bread, And
sells it to the peo-ple.

The bread and macaroni are taken to the grocery store by the truck. The apartment-house lady and the hotel lady telephone to the grocery and give the following order in "The Telephone Song."

### TELEPHONE SONG

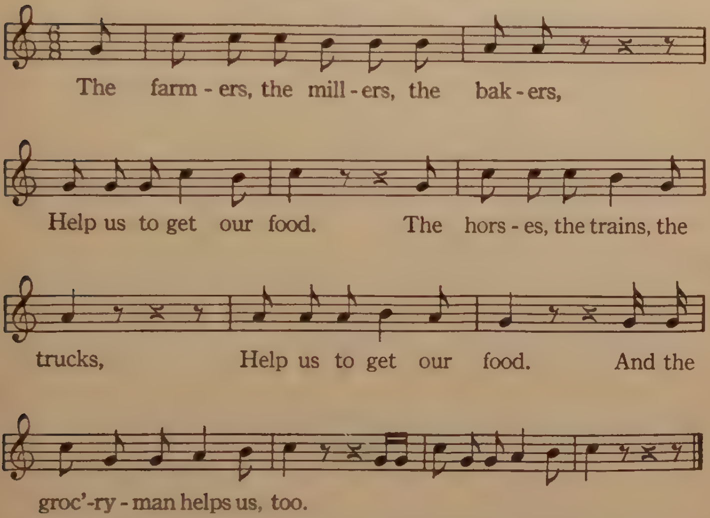

Pir-rip! Pir-rip! Pir-rip! Hel-lo! Hel-lo, is this the
groc'-ry man? Yes, this is the groc'-ry man.


What will you have to - day? Please send me a loaf of bread
And some cream of wheat, And send it right a - way.
Pir-rip! Pir-rip! Pir-rip! Hel - lo! Hel-
lo, is this the groc'-ry man? Yes, this is the groc'-ry
man. What will you have to - day? Please send me some
mac - a - ro - ni and some whole wheat flour, And
send it right a - way.

(*Telephone rings off.*)

When these articles have been delivered by the truck, the whole class comes forward and sings "The Country-City Song."

### THE COUNTRY-CITY SONG


The farm - ers, the mill - ers, the bak - ers,
Help us to get our food. The hors - es, the trains, the
trucks, Help us to get our food. And the
groc'-ry - man helps us, too.

*A Few Examples of English Work which grew out of the Study*

Dear Mother and Daddy,

We are going to have a Wheat Play. Its name is "The City Gets Something to Eat." Its going to be on Thursday morning at ten thirty, March 24, in the girls' gymnasium.

Love from your little girl

Dear Billy,

Guess what happened at the play. The train fell down and broke his crown, and the bags came tumbling after. It was very funny. All of the people laughed. We didn't know that the train would do a cow flop, but I did know that something would come in handy in tricks. Dick took your place of the miller.

Love from ——

### AT A FLOUR MILL

The flour mill is ten stories high. We saw many, many, many windows. There were many doors. There is a great big slide down to the men on the outside. There were bags shooting down the slides into the wagons. When we went inside we saw the chutes coming down. They twirled and curled like corkscrews. The wheat comes up from the boat through a big tube, and then it goes and gets weighed and cleaned. There is a lot of trash in the wheat. We saw the separators. The wheat was dancing on the separators.

In one room there were big bolters. They were wobbling and wobbling. They made us shiver. When you go into the bolter room you think the whole thing is shaking. There were wooden pipes down from each floor and little doors in the pipes. If you put your hand in the door it would get full of flour. The flour comes down through a big pipe into the bags. They have a wooden scale. On the outside of the bag it says 140 pounds. They put the bags in a pipe that has a vacuum to clean the bags inside. If they let go of the bag it will go right up.

DICTATED BY THE GROUP

### THE TRIP TO A BAKERY

One day the second grade went to a bakery. We went to the roof first and there they sift the flour in a machine that says *z-z-z*. On the next floor they had some mixers. The mixers slowly open when it is time for the dough to go into the tubs to rise. Out came some dough and hit the floor with a splash when it was supposed to go into the tub.

On another floor we saw the dough go into an electric oven, and it takes forty-five minutes for it to bake. The bread came out in crusty loaves at the other side. Then they went very slowly on wires to cool. They went to a machine that wrapped the paper around the loaves — after that they were put into boxes and then into trucks. The trucks took them to the stores to be sold. — WRITTEN BY A PUPIL

One girl announced that she was writing "a story at home that tells all about how wheat goes through its life." She brought to school the following story on which, her mother reported, she had spent much time and energy.

### THE LITTLE WHEAT SEED

I was a little wheat seed. First the farmer plowed the ground. Then he planted me. After a few weeks he cut me down with a big reaper. Then he threshed me and put me in a bag. He took me to a truck, and away I went. Then he took me off, and he put me into a train, and it went *choo, choo, choo* till I came to New York City. Then another truck took me to the mill. The miller cleaned me and did the things to make me into flour, and still another truck took me to the bakery, and the baker made me into a loaf of bread, and they sent me to the grocery. After I was sent to the grocery a lady came to buy me. After she got home, when she was eating me she said "Yum, yum."

### *Number Work*

1. Measurements in cooking: halves, quarters, and thirds of cups; use of pints and quarts.
2. Measurements in shop: inches, feet, yards; halves, quarters, and thirds of inches, feet, and yards.
3. Measurement of material for costumes for the wheat play: adding total costs; calculating cost for each child.
4. Counting money from individual funds to pay bill. Recording the amount spent in class account books.

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*Music*

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## *SECOND GRADE*

### A STUDY OF MILK

In another second grade a milk study covering a period of six to eight weeks developed through the building of the play city referred to on pages 89–92 and the study of how the city gets its food.

In the first grade the children had visited a farm and had built a play farm. Through dramatic play with it an appreciation and some knowledge of farm life had been built up. The farm buildings and equipment which the children had made in the first grade were brought into the second grade in the fall, and dramatic play of farm life was carried on for a few days. Then some of the children began to haul the farm vegetables and milk into an imaginary city.

Questions arose as to the distribution of the vegetables and milk in the city. Further interest in these questions was stimulated by a discussion of children's summer experiences in the country and by a desire to trace the journey of the vegetables and milk they had seen produced on the farm.

A few of the children, however, had not had farm experiences, and so trips were taken to a truck farm and to a dairy farm. These trips were followed by other trips to markets and warehouses, to a pasteurization plant, and to milk-receiving sheds.

After the discussion of where milk and vegetables went after leaving the farm the children were eager to build markets, stores, apartment houses, trucks, trains, milk wagons, train sheds, and a pasteurization plant, so that their dramatic play of farm and city would be more satisfying.

The trip to the dairy farm stimulated many questions and discussions about cows and dairy farming, so that for a number of days much of the milk study centered on answering and discussing these questions. The questions represented points brought out in class. The teacher stimulated much of the discussion to make certain that what had been seen would have real meaning.

1. How does grass in the cows change to milk?
2. What is a cow's cud?
3. How much milk does a cow give?
4. Why do some cows give more milk than others?
5. Which cows give the most milk?
6. Which cows give the richest milk?
7. Why do cows need plenty of exercise, fresh air, and clean pastures?
8. Why should there be so many windows in a cow barn?
9. Why are the cows fastened in stanchions instead of in wooden stalls?
10. Why is cement better than wood for the floor of the cow barn?
11. How is water carried away by the gutters in the floor?
12. Why should the floor slope from the stanchions to the waste gutters?
13. Why should the walls of the cow barn be smooth and high?
14. Why should the barn be cleaned and whitewashed often?
15. Why is it better not to have a hayloft above the cow barn?
16. Why is each cow provided with an individual drinking bucket or preferably a drinking fountain?
17. Why should the cows be kept very clean? How should they be cleaned?
18. Why should the cow's udder and teats be thoroughly washed before she is milked?
19. Why should the milker wash his hands and have a clean suit to put on before milking?
20. What is the best kind of bedding to give a cow? Why should the bedding not be too deep?

21. Why should a pail with narrow opening be used for a milk pail?
22. Why should the milk pail be covered immediately after milking is finished?
23. Why should the milk be cared for and stored in a dairy room instead of in the barn or the farmhouse?
24. Why does the farmer wash and sterilize the can with scalding water and steam?
25. Why is the milk kept in cans on ice in the dairy house?
26. Why should the milk be kept cool on its journey to the city?

After the trip to the bottling plant and milk-receiving sheds questions and discussions centered round the pasteurization of milk, the value of milk, and milk in other lands.

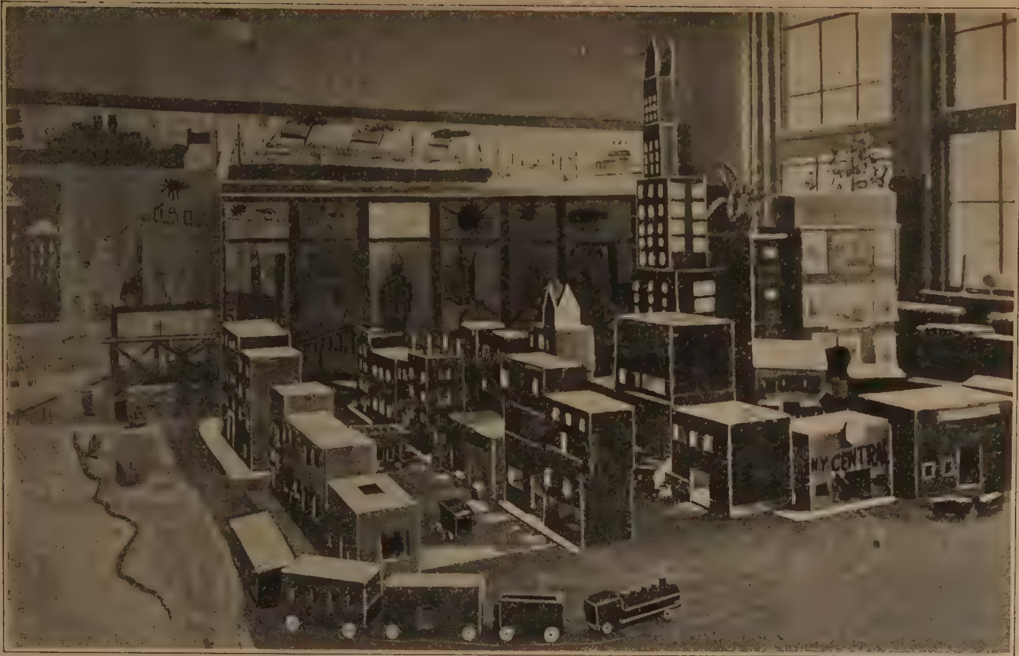
Discussions were based on the following:

1. What is pasteurization?
2. Why is milk pasteurized?
3. How hot must the milk be to be pasteurized?
4. Why are all the pipes in the pasteurization plant taken apart and scalded with steam?
5. How are the bottles sterilized?
6. Why are all the bottles washed and filled without being handled?
7. Why is milk so good for people? Why is it called the king of foods?
8. What other animals besides cows give milk to people in other lands?
9. What are some of the dishes we can cook, using milk?
10. What makes milk sour?
11. Why does the cream come to the top on milk?
12. When milk sours, why do the water and fat separate?
13. What is raw milk?
14. Why does the raw milk we drink not have to be pasteurized?
15. How often are the cows inspected?

These questions and discussions stimulated many interesting activities. The building of a dairy barn and dairy house began on the farm. Trucks to carry the milk to the trains and refrigeration cars in which to carry the milk to the city were made. A pasteurization plant was built, and a milk-delivery wagon made. The children made rag dolls to represent people. Farmer Green was the farmer, and there were rag dolls in the city houses, stores, and dairy. Soon a well-organized play was going on with the farm and city. The cows were in the pasture; the farm children went after them. Farmer Green milked. The milk was taken to the train, then to the pasteurization plant in the city. The milkman delivered the milk finally to the home, and the children had it for breakfast. Many incidents and happenings in the city and in the homes added to the fun and reality of the dramatic play, in which each child participated. One day the second grade took their city and farm into another grade that had built a village and farms. The two grades carried on their dramatic play together, each giving and receiving many new and interesting ideas of play from the other.

Another day the second grade gave a moving picture of the story of milk for the first grade. The children had painted the series of pictures showing the journey of milk from the cow in the pasture to its delivery to the city homes. They fastened the pictures together and rolled them on a reel. As a child rolled the reel and showed the pictures the story of milk was told by the children who had composed it.

A milk play was given by the children as a primary assembly. The children made verses: "Cows in the Pasture," "Milking Time," "Farmer Brown's Song,"



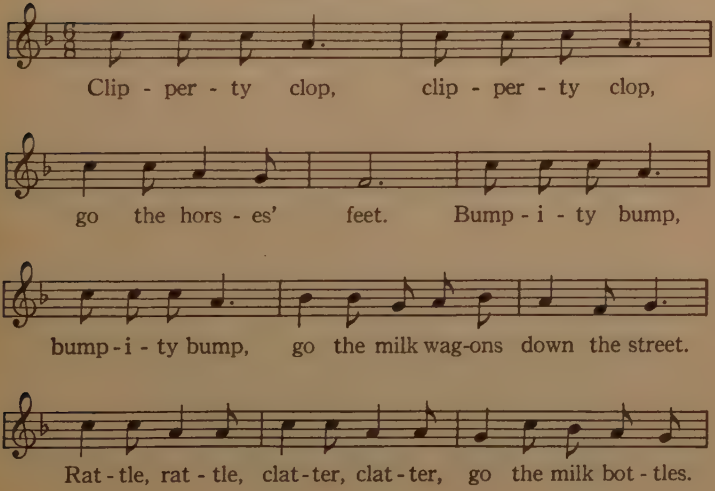
THESE ARE CITY BUILDINGS WHICH THE SECOND-GRADE PUPILS MADE

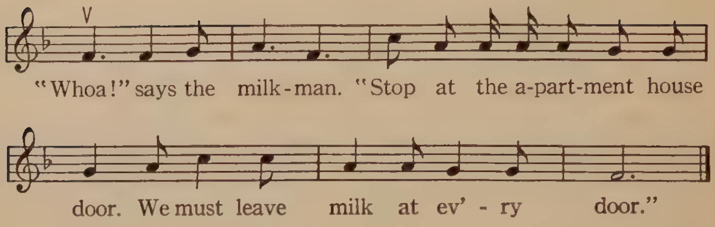
A "MILK PLAY" WAS GIVEN AS A PRIMARY ASSEMBLY

Another second grade made costumes and scenery for their "Milk Play"

"The Milk Train," "Bottling Milk," and "The Milkman." The music teacher helped them to make up simple tunes for the verses. The songs were sung by some, while the others dramatized them. The play-city buildings were used; city and farm scenery was painted for a background, and a house, barn, milk depot, train, truck, milk wagon, milk cans, and milk bottles were cut out of compo board and painted. The milk-can and milk-bottle fronts were fastened on to children who took those parts. Also a cambric horse and some cows were made as costumes for other children. The train, trucks, and milk wagon were merely frames, two sidepieces fastened at the front and back by wooden dowel sticks. The children stepped into these frames and, lifting them by the two sticks, were able to move to the rhythm of the train, truck, and milk-wagon music.

THE MILK WAGON


Clip - per - ty clop, clip - per - ty clop,
go the hors - es' feet. Bump - i - ty bump,
bump - i - ty bump, go the milk wag-ons down the street.
Rat - tle, rat - tle, clat - ter, clat - ter, go the milk bot - tles.


"Whoa!" says the milk-man. "Stop at the a-part-ment house
door. We must leave milk at ev' - ry door."

### *Oral and Written Expression*

Oral and dramatic expression was developed through the class discussions and questions that arose through the spontaneous play with the city, the giving of the milk play, and the moving-picture show.

Many individual stories about trips and original milk stories and verses were written. Milk-study booklets were made by the children, each contributing a part. Each child chose the part he wished to write about. The headings were as follows:

I. Kinds of cows and how you can tell them
    1. Which gives the most milk?
    2. Which gives the richest milk?

II. Care of cows
    1. Barn
    2. Pasture
    3. Milkers
    4. Inspection of cows

III. Raw milk and pasteurized milk
    1. What is the difference?
    2. How is raw milk made safe?
    3. What does pasteurizing do to milk?

IV. Care of milk in the home
    1. Cleanliness — kept in clean dish

2. Scald or keep on ice
3. Kept away from other things

V. Dishes we can make of milk

Ice cream
Cottage cheese
Junket
Butter
Milk sherbet
Custard

VI. Why milk is the best of foods

VII. Original stories of how milk travels

VIII. Milk in other lands

| | |
|---|---|
| The desert | Camel's milk |
| The Far North | Reindeer milk |
| Holland | Holstein cows<br>How milk is delivered |
| France | Story by a child who had been to France |
| Switzerland | Goats' milk<br>Story by a child who had been in Switzerland |

The following milk story was dictated to the teacher by the class:

### THE MILK STORY

The trains come
rolling, rolling, rolling,
into the city.
Clang! clang! clang!
go the milk cans
off the trains
into the trucks.
Away go the trucks
to the dairy.
Clang! clang!
off the milk cans go
into the elevator.
*Z-z-z-z* up goes the elevator.
Clang! clang!
off the milk cans go
into the dairy house.

Pour, pour, the milk
    into the pasteurizing tank.
Rattle, rattle, go the milk bottles
    when they are being washed.
Siss! siss! siss! the milk goes
    into the milk bottles.
Plunk, the tops go on.
Then a man puts them
    into a tin box.
Slide, slide, they go down
    to the refrigerator room.
Gallop! gallop! gallop!
    goes the milkman's horse
    to all the houses.
"Whoa!" and the horse stops.
Rattle, rattle, go the milk bottles
    into all the apartment houses.
"Fifth floor!" says the milkman,
    and the bottles of milk
    are left at the people's floors.
Downstairs again he goes
    and into his wagon.
Rumble, rumble, goes the wagon
    on to the next
    and the next and the next house
    till all the milk is delivered.

### *Reading*

While the milk study was in progress it was the center of much of the reading of the class. Bulletins of the questions, discussions, verses, and stories were made into large charts, and later mimeographed as small individual leaflets for the children to put into their milk booklets. Some of the better readers in the class were able to use easy reference books from the library, looking up answers to the questions and topics which they were interested in discussing. This gave an opportunity to develop interest in reading for information. Pupils who so used the library soon had completely independent reading habits.

### *Art*

The milk study was rich in opportunity for art expression, which was developed through

Painting pictures of trips.
Painting scenery for the play.
Making costumes for the play.
Painting pictures for the moving picture.
Painting pictures for the posters to show "Milk in Other Lands."
Modeling clay cows for the farm.
Illustrating milk booklets.

An appreciation for masterpieces was stimulated by bringing into the classroom copies of pastoral pictures painted by masters.

"The Edge of the Forest of Fontainebleau," by Rousseau.
"Young Herdsmen with Cows," by Cuyp.
"Oxen going to Labor," by Troyon.
"Return to the Farm," by Troyon.
"Ploughing," by Bonheur.

Pictures and posters on cows, dairy farms, and pasteurizing and bottling milk were also brought in by children and teacher. These were cut out of agricultural and dairy magazines and the *National Geographic Magazine.* Lantern slides which showed the story of milk, model dairy farming, and pasteurization plants were lent by the Natural History Museum of New York City.

### *Handwriting and Spelling*

The children's written stories, verses, and bulletins involved a great deal of handwriting and spelling. Each child was given individual help in the formation of letters when he had difficulty. Each child had an individual spelling book with typewritten lists of words most often needed in writing stories. These were arranged alphabetically so that he might easily refer to them when needed; also space was left on each page so that new words could be recorded.

### *Number Work*

The building of the play city was the occasion for some use of number. Measuring windows and doors in buildings and cutting strips of wood the right length for trains, milk wagons, and trucks demanded the use of the ruler — inches, feet, yards. Through the use of milk in cooking the children learned to measure pints, quarts, and gallons.

### *Science*

Elementary science, which was kept on the level of the second-grade child's interest and ability, arose often in connection with the study.

- Souring of milk; noting that water and fat separate
- Bacteria in milk
  - Disease bacteria
  - Bacteria that make it sour
- Pasteurization
  - Why is milk pasteurized?
  - What happens to bacteria?
  - Who discovered pasteurization?

Elements in milk: water, fat, sugar, minerals, protein
Why milk is a substitute for eggs or meat
Sanitation
Cows, dairy houses, barns
Utensils; as, tanks, pipes, pails, etc.
How grass changes to milk in a cow
Digestive process. Cows have four stomachs
What is a cud?
What is rennet?
Why shaking cream in a jar makes it go to butter
Why cream stays in the center in a separator and milk goes out on the sides
Use of laboratories in dairy plants. Inspection of cows and milk: how and why?
Interest in the use of steam to sterilize pipes in a pasteurization plant led to some simple experiments in forming steam, and a model steam engine was brought to class to show the children how steam made an engine move

### *History and Geography*

1. Wild cows.
2. Cows in other countries.
3. Primitive ways of handling milk and making butter.
4. Invention of milking machine, separator, and churn.
5. Map work.

After the trips about the city great interest was taken in locating on a map of the city the various places visited. The trips were traced from the school to the spots visited. Maps of the trip were drawn on the floor and on big sheets of paper. This led into the making of pictorial maps of our city. As the children became interested in tracing the sources of milk, maps of the United States were introduced and dairy and cattle sections located. The interest in milk in other lands led to the introduction of the world globe and the locating of other countries. The play city was laid out to represent New York for dramatic play. The East River, the Hudson River, the harbor, the parks, the docks, the railroads, and the streets and buildings were marked out. This made the child's understanding of his own geographical environment vivid and real to him.

### *Exhibits of Work*

After the milk study was completed, an exhibit of the children's work was placed in the corridor exhibit case for the other grades. The pasteurization plant, the trains, trucks, milk wagons, dairy barn, and cows were set up. The children's written work (stories of milk and milk-study bulletins), posters of milk in other lands, and also paintings were mounted on cardboard and hung on the walls of the case. Maps of the city, drawn and illustrated by the children, were also exhibited. During the development of the unit many less complete exhibits were arranged in the classroom.

### *Cooking*

The cooking of different dishes made of milk stimulated an interest and developed an appreciation for milk as a food — custard, junket, milk sherbet, butter, and ice cream. The children understood why milk is so valuable as a food when they learned that it contained fat, sugar, water, and minerals. Many children who had been omitting milk from their morning lunches began to drink it after this study. The interest carried over to the home, and many children tried out the milk recipes in their own kitchens, and more interest in milk as a food in the home was created.

### *Music*

*Songs related to the unit of study*

"The Friendly Cow," "The Train," and "Getting Milk," in "Congdon Music Readers," Book I. Congdon.

"The Purple Cow," "The Cow," and "The Farmer," in Universal Song Series, Book I. Silver, Burdett and Company.

"Churning Song," in "Songs of Childhood." Music Education Series. Ginn and Company.

"The Train," in "The Song Series; Primer." A. S. Barnes and Company.

"Bossy Cow," "Songs of a Little Child's Day." Milton, Bradley Company.

The children made verses, and the music teacher helped them make simple tunes for them. Some sang the songs, while the others dramatized them.

### *Habits and Attitudes*

A deeper appreciation for those who help to supply us with milk was evident. Milk was no longer a thing just taken for granted. An understanding and feeling of the dependence of man and the necessity for coöperation were felt. The children grew in coöperation, in planning, and in the better handling of tools and materials. Much information was obtained through discussions and through intelligent questions. The children grew in ability to search for answers to their questions and to reason about the problems that arose. A keener observation of all that was going on about them and a more intelligent interpretation of life today resulted.

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COOKE, EDWARD V. "The Moo Cow, Moo."

FROST, ROBERT. "The Pasture."

HERFORD, OLIVER. "The Milk Jug."

LETTS, WILLIAM. "The Kerry Cow."

STEVENSON, ROBERT L. "The Cow." *

TAYLOR, JANE. "The Cow."*

## *THIRD GRADE*

### CHINA

### *Choosing the Unit*

In the first and second years of school, at least in his early school experiences, the child has been helped to understand the more simple factors in his environment through such units as the farm, the village, making a play city, the food supply, and playing store. He enters the third grade with practically the same play interests. He will want to build and construct; he will be full of dramatic play. His intellectual interests, however, have been widening. About this time he becomes curious to know about people in distant lands, how they live, and how their needs are provided. He has seen something of the larger life of the world and has been fascinated by the contemplation of maps and pictures of people in other places. He has gained some degree of control over reading as an essential skill and is ready for a more extended use of books of reference.

Very appropriately, then, the teacher may guide the class in the third grade toward a consideration of the people of other lands. In doing so she makes use of their present play interests and their widening intellectual interests in a way that will help them to grow steadily. The pupils may build and furnish houses, make costumes, play at living in another land, and carry on many other activities natural to them.

As the teacher helps in the choice of the countries to be studied she is conscious of certain objectives. There must be opportunities for continued growth on the part of the children in understanding their own environment.

Children who ask "What is a silkworm?" "Does wool come from a worm, too?" "What is the difference between spinning and weaving?" have before them a wealth of possible experience in the study of silk or wool. Those who ask "Why do the Chinese have so many dried foods?" still need to know about our own methods of food preservation and are ready for experiments along that line. Exclamations of surprise at seeing pictures of men planting rice in water show that the children still have to learn that certain types of plant life have developed under certain conditions of environment. Through the interest in a foreign field the teacher may also help the children to a better understanding of their own environment. She knows what countries offer richest opportunities of this nature and guides the choice accordingly.

Another objective is before the teacher. She wants the children to appreciate the contributions of other people in art and industry and is conscious that certain countries offer richer opportunities than others. She must help the class to choose that country whose products in art and industry are most commonly found in their own homes, in the shopping districts, or in the city museums.

Since no outline of subject matter is made in advance, it is not only necessary for the teacher to set the stage in such a way that the children will early form habits of eager curiosity and will seek the subject matter as they need it for the successful carrying forward of the activity in which they are engaged, but she must also know what books of information and what illustrative materials are at hand and which of these can be used by children of this age.

Perhaps, too, the teacher should be guided by the desire to choose countries which represent different geographic types. Nothing helps to a sympathetic understanding of other people better than an appreciation of the ways in which they live in order to meet conditions of environment.

The work may begin by the introduction of books, pictures, costumes, by seeing an exhibit of interesting articles, through a trip, or it may come directly from some previous interest of the group. It may be suggested by a child, as, when playing in the snow, some children started making an igloo, and one called to the teacher, "Why don't we study about the Eskimos?" It may be started by the teacher, who, because of interest in silk developed while studying China, brings to the group a sheep's fleece and starts an interest in wool and the life of pastoral people.

The third grade whose work is reported here studied (during one year) Holland, the Far North, China, and the pastoral people of the world. The last included a study of desert life and aroused widespread interest in Egypt, its life today and in ancient times. The teacher consciously guided the class interest into the study of China. Here is a people so misunderstood among us — a people with an ancient civilization back of them who have made great contributions in art; who make the most of every bit of available soil in an intensive agriculture, making terraces on hillsides and gardens on houseboats; whose whole mode of life reflects the overcrowded conditions of the country. Here was the source of many new meanings when contrasted with those gained through the study of Holland, the Far North, and Egypt.

The China unit was approached through reading aloud from "The Rabbit Lantern," a delightful book of stories of child life in China, and "Shen of the Sea," a book of

Chinese legends. For two or three days no activity was started. As children took turns, each reading a story from "The Rabbit Lantern," questions were asked and comments made. Several children told of having many Chinese things at home and were urged to bring them. Interest increased as these objects were brought; some by children from other classes.

Much of what was brought was suggestive of the beautiful things that are in the Metropolitan Museum of Art. When a bit of carving was brought, the teacher said, "There are many like this at the museum. We must go to see them." When a story told of the loss of a beautiful hand-painted scroll, she told of those the children would see at the museum. Soon a trip was planned and a list made of things they hoped to see, such as carvings, paintings, embroideries, scrolls, grotesque figures, tapestries, pottery, and costumes. The trip came during the early stages of work upon this unit and was a stimulus to further interests. It had a telling effect upon the art work, especially in painting and modeling imaginary figures and in increased effort to fill spaces attractively in design. It was of great benefit in helping to an appreciation of Chinese contributions to art.

The interest in China had barely begun when a child suggested giving a Chinese play like the Dutch play which the class had given; but the teacher proposed as an alternative that they might build a Chinese house big enough to play in, make a few costumes, and play at being Chinese children. Her suggestion was accepted. Work began immediately and continued to the end of the period spent on this unit (about seven weeks).

The reading of the two books "Shen of the Sea" and "The Rabbit Lantern," the objects brought from home, the trip to the museum, and the plans for the house and for the costumes called forth many questions. Pictures shown and information brought to answer questions caused more questions, and so the thing grew. Sometimes one question suggested another. The questions are of importance because they caused the search for information that formed the subject-matter content of this unit. They also led to many of the activities. The most significant of these questions are given below:

How are the houses of the Chinese made?
What is Chinese cloth made of?
What is a silkworm?
Why do the Chinese burn grass and old sandals?
Why is there so little wood?
Why do things cost so little?
Why do the men do the work of horses and trucks?
What are candied rice balls?
Why is rice grown in water?
Why is food often scarce?
How big is China? Is it as big as the United States?
In such a crowded country how is enough food raised?
Why are so many foods grown in water?
Why are there so many dried foods?
Do the Chinese have newspapers? libraries?
Why was the Great Wall of China built?
How was it built?
Do the Chinese still build walls?
How old is China? Is it the oldest country?
Why is there so much water?
Where do the Chinese get the clay for so many mud houses and for their pottery?
Does Chinese music have notes like ours?
Do the Chinese have musical instruments like ours?

The questions were jotted down by the teacher and were later put on the blackboard to stay until answered.

When one list was erased, another took its place. The children were encouraged to look for answers in books borrowed from the school library and in books and magazines at home. They brought maps, books, pictures, and Chinese objects of interest to be used at "report time," a period never omitted from the day's program without the protest "Aren't we going to have 'reports'"? No point was made of answering the questions in a logical order. Organization came later as frequent references

BRINGING THINGS OF INTEREST

This hall exhibit case was filled with articles which the pupils brought from home to represent Chinese life were made to information previously found and as the teacher deliberately helped the children to summarize.

As the questions were asked they suggested to teacher or children many and varied activities. Questions about rice led to reading about rice culture and to cooking rice in several ways. Questions about silk started the reeling of raw silk from cocoons and a study of silk. As questions suggested activities, so one activity suggested another. Making scrolls to decorate the house came as a result of the work on the house and the trip to the museum. Some activities came because of the books read. The legend of the invention of printing led to the making of block prints and the printing of designs on linen tablecloths. All the activities are listed below in the order in which they occurred. Some continued almost daily during the seven weeks spent on this unit, some took place once or twice a week for a period of several weeks, some occurred only once, though it must be understood that some occurred simultaneously with others.

Reading "The Rabbit Lantern." (*Daily for about two weeks*)
Beginning of questions. (*Continued almost daily*)
Finding answers. (*Almost daily*)
Bringing things of interest. (*Occurred at irregular intervals*)
Making and furnishing the house. (*Almost daily*)
Making a few costumes. (*Daily for two or three weeks*)
Writing explanations of the activities for a visitors' book. (*Done at irregular intervals for seven weeks*)
Painting and modeling by individuals
Visiting the Metropolitan Museum of Art
Arranging an exhibit of art objects; writing explanations inviting other classes to see the exhibit. (*Done by individuals at odd moments, two or three days*)
Writing to a silk company for cocoons. (*Done by one boy*)

Cooking wild rice and unpolished rice. (*Forty-five minutes*)
Eating the rice for lunch
Arranging an exhibit of Chinese dried foods. (*The exhibit was given by a Chinese merchant*)
Drawing designs for block prints
Reeling silk from a cocoon. (*Done by individuals at odd moments until each one had had a turn*)
Writing Chinese nursery rhymes. (*Thirty minutes*)
Making an exhibit of rice; writing explanations. (*Done by individuals in about one hour*)
Cutting linoleum blocks
Making an exhibit of our own dried foods side by side with the Chinese foods. (*Arranged in the case as they were brought in on several successive days*)
Visiting a neighboring grocery to find more of our dried foods. (*Forty-five minutes*)
Learning a Chinese song. (*Sung frequently on later occasions*)
Making experiments to illustrate the formation of clay beds. (*A few minutes*)
Printing designs on linen table covers. (*Two forty-five minute periods, one week apart*)
Experimenting in preserving foods, by canning, drying, and refrigeration. (*Two forty-five minute periods, one week apart*)
Cooking the dried apples; eating the apple sauce. (*Done weeks after the experiment*)
Planning an assembly program. (*Parts of three days*)
Making rice-flour cookies for the mothers who came to the assembly and spent the morning at school

The program was flexible and might be changed to fit the needs of any particular day. For example, the child who had used the silent-reading time to prepare a story from "The Rabbit Lantern" read it aloud during a half hour taken from one part or another of the daily program. The class was impartial in alloting time to the different phases of their work.

A daily program, planned in part by the pupils, was put on the blackboard. Here is one, representative of many:

| | |
|---|---|
| 9:00 | Playing marimbas |
| 9:30 | Twilah's report. Ray and Dorothy mount pictures |
| 10:00 | Gordon's story |
| 10:30 | Spelling |
| 10:45 | Gymnasium |
| 11:20 | Lunch; committee reports |
| 11:40 | Arithmetic |
| 12:00 | Reading; Barbara and Robin choose the most interesting book reviews |
| 12:30 | Plan yard work |
| 12:45 | Lunch and rest |
| 2:00 | Work in yard |

Though the work on China was the center of interest, it is evident from the program that many other class activities were going on. The children were keeping up their work in music and were preparing to play and to sing in an assembly program of music by Bach, Beethoven, and Haydn. At lunch time they were checking themselves on their faithfulness to room duties. In all probability the work in spelling and arithmetic had reached the stage of formal drill which follows such a body of number experience as the children had been having during the two years preceding this grade. The library was in use not only as a place to find answers to questions about China, but as a storehouse of books to be read for pleasure. The custom of making a brief review of a book to encourage others to read it was kept up, and on the particular day under consideration a committee was selecting some reviews to be read a few days later at a library assembly.

The children had been active and interested throughout the study. They had learned many things. How was the information reorganized and the interest capitalized in meaningful generalizations? The exhibits of art, of rice, of Chinese and American dried foods, with the written explanations, constituted one means of summarizing and generalizing. Another means used was to ask some general questions:

If you visited China what should you expect to see?
What should you expect the people to be doing? Why?
In what ways are Chinese people like us?
In what ways do Chinese people differ from us? Why?

An assembly program gave the last and final reorganization. The children suggested what they should like to tell the other classes of the school about China, and the program was planned as follows:

*Assembly Program*

How we became interested in China

How we made our costumes. (*Showing drawings, patterns, finished costumes. Showing some genuine costumes from the exhibit*)

Our Chinese house

The use of scrolls by the Chinese. (*Showing some scrolls painted to hang in the playhouse*)

The Chinese sense of humor. (*Showing some grotesque figures painted and modeled by the class*)

A legend about the invention of printing by the Chinese. (*Showing the block printing done by the class*)

Chinese art. (*Showing examples of embroidery, weaving, carving, painting, pottery*)

What we learned about rice and what we cooked

Some Chinese Mother-Goose Rhymes. (*Reading fifteen composed by members of the class*)

The comparative size and population of China proper and the United States. (*Using map*)

How the people in such a crowded country get their food

Why there are so many dried foods

How Chinese books are made. (*Showing some*)

How silk is made. (*Showing the silk reeled by the class*)

Lantern slides showing phases of life. (*Explained by the children*)

Parts of one day were spent in planning the program, and parts of two days in trying out children for the speeches. Each child was assigned a topic, and on the day of the assembly attempted to help the audience to understand China as he understood it. It was a serious lesson in international fellowship (see page 300).

### *Analysis of the Unit according to Subjects of Study*

*Industrial arts and household arts*

- Furnishing a house; making a garden and a wall
- Learning about Chinese homes
- Cutting patterns and making costumes
- Hemming table covers decorated with block-print designs
- Reeling silk from cocoons and making a study of the production of silk
- Making rice-flour cookies and candied rice balls
- Cooking polished rice, unpolished rice, and wild rice
- Making an exhibit of different kinds of rice and explaining relative food values
- Making an exhibit of Chinese dried foods and our own dried foods
- Learning about the beginning of printing

*Fine arts*

- Making a trip to the Chinese rooms in the Metropolitan Museum
- Modeling some grotesque figures and some dishes for the house
- Painting imaginative animals and dragons

- Designing and cutting linoleum blocks
- Decorating table covers with printed designs
- Painting trees and flowers for a Chinese garden
- Painting scrolls for a Chinese house
- Making a collection of Chinese works of art
- Drawing designs for costumes
- Making designs for book covers (Chinese rhymes)

*Music*

- Singing Chinese folk songs
- Attending a Chinese operetta in one of the theaters

*Geography*

- Finding how the Chinese adapt themselves to their environmental conditions
  - Their use of paper instead of glass
  - Their use of mud and clay in building
  - Their use of clay in making fine china
  - The intensive agriculture and dependence upon fish and poultry
    - The use of wet lands
    - The terraces on mountain slopes
    - The gardens on houseboats
- Finding the size and population of China in comparison with that of our own country
- Relating the poverty, scarcity of food, cheap labor of coolies, and impurity of water to the density of population
- Using maps
- Finding the position of China on a world map
  - Using the physical map to find why a large part of China has few people, whereas China proper has such a dense population

*History*

- Inventions of the Chinese
- Tracing the silk industry from China to other parts of the world
- History of the Great Wall of China
- Story of Marco Polo

A SCROLL TO DECORATE THE HOUSE

This scroll, painted by a third-grade pupil, was used in the Chinese house

*Science*

- Experiments in preserving foods by canning, drying, refrigeration
- Experiments to show how clay beds are formed
- The life history of the silkworm
- The vitamin in whole cereals

*Reading*

- "The Rabbit Lantern." (*Stories of child life in China*)
- "Shen of the Sea." (*Chinese legends*)
- Much reference material from the school library and from home
- The following are representative (see Bibliography at end of this unit)
  - The World Book
  - Compton's Pictured Encyclopedia
  - The Book of Knowledge
  - *The National Geographic Magazine*
  - Geography for Beginners
  - The Four Wonders
  - Child Life in Other Lands
  - How we are Clothed
  - How we are Fed

*Composition*

- Writing for the class book. Accounts of some of the activities
- Writing explanations of the exhibits
- Writing letters to absent friends; to business firms asking for illustrative materials; to other classes, inviting them to see the exhibits
- Giving an assembly program, each child reporting on some phase of the unit of work
- Composing rhymes similar in some respects to the Chinese Mother-Goose Rhymes

*Arithmetic*

- Measuring for parts of the house, walls, and windows, and for the costumes
- Finding how long ago some events happened

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## *THIRD GRADE*

### INDIAN-LIFE UNIT

The larger and more significant meanings underlying the selection of units based upon the life of other peoples have been explained at some length on pages 131–133.

The more specific reasons for the choice of the Indian-Life unit are these. Indian life has an intrinsic interest for young children. The opportunities it affords for activities of varied natures are many. Illustrative material is abundant and easy to obtain. Stories of Indian life easy enough for third-grade pupils to read are numerous. The primitive culture of the Indian, particularly the Indian of the Southwest, is simple enough for the child to understand and interprets for him the less complicated ways of meeting such needs of life as clothing, food, shelter, records, weapons, and utensils. It is a study that is rich in worth-while leads. It has a historical as well as a social significance for the child. It is a subject to which the children continually return, even after it has been replaced by another central activity.

The study had its beginning in some cotton bolls which a Southern grandmother sent to one of the children who brought them to the school. The bolls, dripping their white fluffiness, caught the children's attention immediately. Questions followed. "How do they make cotton smooth and flat as you buy it in the store for sore places?" "Can't you buy cotton another way to make clothes out of?" "Is my underwear cotton?" "Is this shirt cotton?" "How do they pick cotton?" (To this came such answers as "They reap it," "They cut it," "They cut it with scissors.") "Can you make wool out of cotton?"

Here was a lead. A study of cotton that would answer these questions would bring contact with any number of other lands and peoples. So we began and found ourselves in two weeks' time face to face with the American Indian of the Southwest. It was a natural enough development. Through coöperation with the industrial-arts teacher the class was led to see that the cotton must be seeded, the fibers straightened and made into thread, and the thread made into goods. Each operation was carried out, the cotton being first seeded and carded by the children. Then they tried to twist it into thread with their fingers, but, finding this an unsuccessful method, they turned with interest to a simple hand spindle which the teacher brought in. Its construction was so simple that the whole class made spindles and spun — with more or less success — their freshly carded cotton. Now they were ready for weaving; so a trip to the Museum of Natural History was arranged in order that they might see some primitive looms and spindles. The best examples of these were to be found in the Indian exhibit, and there a full hour was spent. The class came away with an added interest in weaving and a new appreciation for Indians. From that time on the textile study, which had begun with the cotton, merged into the Indian unit, which now received the major portion of time, although the textile study was definitely related to it through the processes of weaving and dyeing. Since the preparation of wool was similar to that of cotton and the process of weaving was alike for the two, it was easy to go from the work with cotton to similar work with wool when the Indian unit became the real center of interest.

The class went ahead with the making of looms, mostly frame looms of various sizes, though one box loom and one successful roller loom were made. For the next two months weaving engaged much of the odd time of the children, some striving definitely for Indian effects.

Other interesting things had been noticed on the trip: the kinds of houses the different Indians used, their basketry, their pottery, their clothes, and their food. Indian pictures showing the life of the "pueblo" and "tepee" Indians — the children's own classification — were painted on the easel or at the tables. Plans were made for building a tepee and a wooden pueblo in the back yard. Both should be large enough to play in. Indian stories were asked for in the library, and Indian material began to come in from home — pictures, books, arrowheads, pottery, beadwork, bows and arrows, necklaces, blankets. Frequent comparisons were drawn between the life of the "tepee" Indian and the "pueblo" Indian.

One day a discussion of the Indian tepee and pueblo brought up the question "Why do some Indians live in movable houses and others in buildings?" The reason for moving the tepee whenever the food supply was exhausted was clear to most of the class. When followed by the question "What does the Pueblo Indian do when *his* food supply is used up?" the answer was not so apparent. They talked over the various foods that Indians eat, and finally one child said: "I've thought of it just now. The Pueblo Indians *raise* more of their food and do real farming; so they don't have to move as Indians do who get their food by hunting."

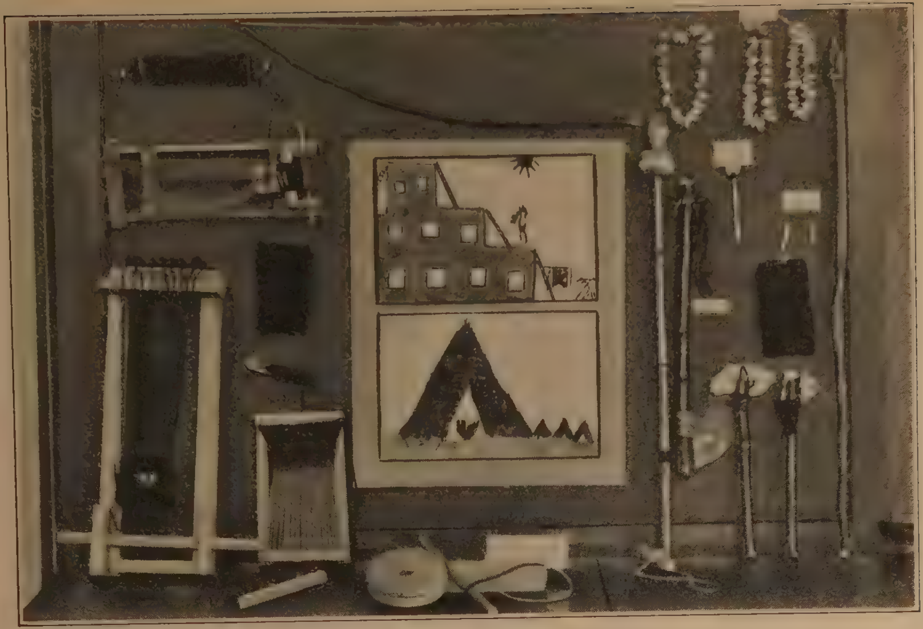
Another day the skin of a mountain lion was brought in. It was stretched on the bulletin board, and beside it was a sheet of tagboard bearing this inscription: "If you were an Indian of the plains, how would you use this skin? Write your suggestions here." Some of the suggestions follow:

"I'd use it for part of my tepee"
"To make a tent flap"
"To sleep on"
"For clothes"
"I'd cut it in strips for thongs"

The attention of the class was directed particularly to the life of the Pueblo Indian. One most effective means of accomplishing this was through the use of Grace Moon's charming stories "Chi-Wee" and "Chi-Wee and Loki." These stories, laid among the Indians of the Southwest, were read to the children and gave them additional interests in the life of these people.

In the school yard the children found some pieces of slate which were easily chipped, also various round and flat stones. They used the slate for making spearheads and arrowheads, chipping them into shape with a harder stone. The round stones were used for hammering, and the flat ones were crudely shaped into war hatchets and axes. Pieces of bone were scraped and shaped into bone needles. One earnest worker brought a box of "jingle" shells and patiently pierced and strung them for a lovely shell necklace. The director of the school had a splendid collection of Indian relics which he brought to the classroom and explained to the group. For days the children worked in groups of three or four on a fire drill, and although they never succeeded in making smoke, they got the wood hot enough to realize that continued friction would produce considerable heat.

They had seen pictures of Indian bowls and wanted to



AN EXHIBIT OF ARTICLES MADE BY THE THIRD-GRADE PUPILS TO REPRESENT INDIAN LIFE try their hand at making some. The art teacher insisted upon real Indian designs and showed them a number of Indian symbols. These were worked into the designs for their clay bowls, which were made by the coil method that the Pueblo women use. The bowls were painted and fired, but not glazed. To make them waterproof, they were given a coat of white shellac.

The subject of Indian food came up again and again, both in the reading and in the class discussions. The class listed the foods that they read about: game (fresh and dried), beans, corn, potatoes, dried fruit (especially among the Pueblo Indians), pumpkin, squash, and fish. A small collection of Indian foods was made. The children wanted to cook some of the food, and so with the help of the household-arts teachers they baked beans for their luncheon one day. A few days later they prepared apples and pears and dried them in warm ovens. Then, because they wanted to cook so many Indian dishes, the teacher suggested an entire Indian luncheon, with different committees preparing different foods. They planned their menu and chose the food which they wished to prepare. The menu consisted of

STEWED RABBIT HOT CORN BREAD
SUCCOTASH BAKED SWEET POTATOES
STEWED FRUIT (of their own drying)
MILK

In addition to the committees on foods, there were a committee on setting the table and a clean-up committee. No hungry Indians could have enjoyed a feast more than these children did this lunch of their own preparing. Descriptions of the various foods used were written and put into a booklet called "Indian Foods."

From time to time stories of Indians were found and read to the class by various members. Pupils also made up Indian stories and read them aloud. The librarian came one day and told stories of "Little Burnt Face" and "Little Dawn Boy." From the latter came a number of spontaneous pictures illustrating the Rainbow Bridge over which Dawn Boy walked. The class worked out a play from one chapter of "Chi-Wee and Loki" and gave it in an elementary-school assembly.

Experiences with wool came in connection with weaving. Then came a most interesting question, "Where did the Indians get the dyes to color their yarn?" This led to a series of experiments with natural dye, the children bringing in any material which they thought might be used for making dyes. Such things as oranges, carrots, cranberries, canned blueberries, red cabbage, beets, leaves and sprouts, were squeezed, boiled, or scraped for their color. A colonial dye made from an old recipe calling for scrap iron, vinegar, and lye was used successfully. Then came the question of how designs were put on cloth. This led to an examination of pieces of cloth which showed some designs woven in and others printed on the cloth. Designs with stick prints were tried out and later some printing with linoleum blocks was done. (The designs on these blocks were almost exclusively Indian.) Commercial dyes were used for tie-dyeing and batiking some small silk handkerchiefs. A trip to a department store which was demonstrating hand-blocked cretonnes and running a film which gave the whole story of a piece of cretonne proved a worth-while conclusion to these experiences. Through such activities the Indian-Life unit was enriched and an understanding of phases of present environment resulted.

[illegible] that this skin of a mountain lion if you were an Indian of the plains what would you use it for? Write your suggestions here
This is an Indian loom Notice the way the warp threads are fastened to the frame

AN EXHIBIT OF INDIAN ARTICLES BROUGHT FROM HOME

To summarize the activities engaged in, they were these:

Picking and seeding cotton, carding cotton, making spindles, spinning cotton; going to the museum to see primitive looms, making looms, weaving rugs, headbands, and bags; arranging a cotton exhibit; washing and carding wool, spinning wool; making a pueblo and a tepee; chipping arrowheads and spearheads, making bone needles, stringing a shell necklace, making clay bowls; arranging an Indian exhibit; making a fire drill; preparing Indian food; trying out vegetable and fruit dyes, making iron and vinegar dyes; listening to an adult's report on the Navajo Indians; tie-dyeing handkerchiefs; examining a collection of Indian relics and having them explained; drying apples and pears, preparing an Indian dinner, making a booklet of Indian foods; making a play from "Chi-Wee and Loki"; trying out the effects of lye and vinegar on red-cabbage water; painting many Indian pictures, making linoleum blocks with Indian designs cut in them; reading many Indian stories, writing Indian stories; working out Indian rhythms and dramatizations in the gymnasium; visiting an exhibition of native Indian drawings; reading and reporting on questions raised regarding Indian life.

In terms of subjects of study, what did this Indian unit cover?

### *Reading*

Indian stories formed much of the individual and group reading material (see Bibliography at end of this unit). Not only were stories read for pleasure, but books of reference were freely consulted by these pupils, almost all of whom had attained independence in reading.

### *English*

Talking to the point and expressing oneself clearly was emphasized in giving reports and information to the class. Occasions for writing reports, labeling exhibits, writing stories, and making booklets were used to advantage.

### *Spelling*

The words needed most commonly in connection with their written work were listed and spelled.

### *Geography*

The physical environment of the Indians as it developed different types of living among them was emphasized. The regions in which the Indians originally lived and their present reservations were located. The wool-producing sections of our country were located.

### *History*

Stories relating to the Indian and the early history of our country were told and read. These related mainly to the New England settlers and to the Spanish explorers of the Southwest.

### *Industrial Arts*

A study of cotton and of wool was made. This involved carding, spinning, and weaving. A study of dyes and of various dyeing processes was made. Making clay bowls led to such questions as "What kind of clay did the Indians use?" "How did they fire their bowls?" "How did they color them?" The class learned about Indian homes.

### *Household Arts*

Indian foods were studied and prepared.

### *Fine Arts*

Indian pictures illustrative of the topics discussed were painted. Clay bowls were made and decorated. A booklet cover for Indian foods was designed and painted. Linoleum blocks were designed and cut. Unit designs were worked out with stick prints.

### *Physical Education*

Indian dances and dance rhythms were learned.

### *Arithmetic*

Number experiences were provided through such activities as measuring poles for tepees, measuring covers for tepees, counting and dividing the cost of the luncheon, dividing the cost of silk for dyeing, etc.

### *Science*

Studying the cotton plant and studying wool brought out certain natural characteristics of the fibers. The study of dyes not only showed how these fibers absorb colors but also illustrated certain chemical reactions, such as the effect of vinegar on iron, etc. Fire by friction was illustrated by the various fire-making devices of the Indian. The effect of firing clay was seen. The resist processes in dyeing were illustrated in the tie-dyed and batik work. The effect of slow heat and air on fruits was demonstrated.

This Indian study was very definitely the central activity from the middle of October until the middle of January. A long time, to be sure, but not long enough. Three months later the children still painted Indian pictures, took Indian stories from the library, and brought pictures and clippings. One child remarked to a grown-up, "I wish we could have finished our study of Indians." While it was explained to him that to finish a study of Indians would take a lifetime, the criticism is nevertheless a fair one. The study might easily have continued for another month, for some most interesting material on the South American Indian was brought. Some rugs and blankets woven by the Indians of Chile, and a book, "Red Howling Monkey" (the story of Indian life in the tropical jungle), could have been used for a lead into a study of the South American Indian. This new material would have justified carrying farther their interest in Indians without keeping them too long on the same sort of activity.

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## *FOURTH GRADE*

### A Food Study

The unit on food has been used by five different teachers in the fourth grade at the Lincoln School. Each teacher has used the experiences of those who have previously tried it. These experiences are recorded in outline form and are filed in the office of the elementary-school principal where they are always available. The different teachers developed the unit in different ways, but all have added to the accumulating list of illustrative pamphlets, newspaper and magazine clippings, and health charts, as well as to the collection of materials which the pupils have brought from time to time and which have been found valuable to preserve. The room teachers have freely consulted the special teacher of household arts for specific help in cooking, in science, and in all the phases where special knowledge is needed in laboratory work or in nutrition and science.

Pupils in the fourth grade begin to make independent use of the school cafeteria. In order to insure their selection of suitable luncheons they should make a rather careful study of balanced meals and food values. This choice of food becomes their responsibility, and so a unit on food usually becomes the first definite whole-class activity in the fourth grade. The object is to create a real interest in the proper selection of food because of intelligent knowledge of food values.

On a food chart this advice was found: "Drink one quart of milk and eat two salads and one thin-green-leafed vegetable daily." All the pupils were good milk-drinkers, but the thin-leafed vegetables were the stumblingblocks. These vegetables were listed, and their food values were discussed and studied. Vitamins were explained, and the foods were recommended because of vitamins and valuable minerals and for roughage.

Two other kinds of food for making a well-balanced meal were studied in groups: the energy-giving foods and the building foods. Tests for starch were made, and a few foods containing starch were cooked and served by the class. Salads were prepared, and foods from all three groups were cooked and served for noontime luncheons.

Until the children knew how to choose wisely, the daily menu was written on the blackboard, and sample lunches were made up before the class went to the lunch room. Records of actual lunches were kept for a few weeks and were checked by the children on a chart to see if they had chosen well-balanced meals.

An informal food test was given to the pupils to see what they had got out of their study. Informal tests helped focus attention on facts to be remembered.

### *What have we Learned about Foods?*

1. Which raw vegetables are good for us to eat? Name three.
2. You (should) (should not) eat the skins of apples, of pears, and of baked potatoes if well washed.
3. Mark *G* after each well-balanced menu. MARK HERE
   *a.* Escaloped potatoes
   Rolls and butter
   Boiled rice and marmalade

   *b.* Creamed chicken
   Baked potato
   Carrots
   Fruit salad
   Milk

MARK HERE

*c.* Lamb chops
Macaroni and cheese
Milk
Custard

*d.* Beets
Spinach
Fruit salad
Grapefruit

*e.* Cream-of-spinach soup
Graham bread and butter
Fruit jelly
Milk

4. What is wrong with the luncheons that you did not mark *G*?
If there is too much protein, mark *P* opposite that luncheon.
If there is too much starch, mark *S*.
If there is no protein, mark *X*.

5. Write a figure *1* after protective foods.
Write a figure *2* after building foods.
Write a figure *3* after regulating foods.
Write a figure *4* after energy-giving foods.

Eggs
Beans
Potatoes
Green beans
Carrots

White bread
Meat
Dried fruit
Milk
Fresh fruit

Lettuce
Cabbage
Whole-wheat bread
Ice cream
Raw vegetables

6. Write *yes* after each of these foods which you always eat when it is served to you; write *L* after the ones you have learned to eat this year.

Spinach
Cabbage
Lettuce
Celery

Onions
Beets
Squash
Asparagus

Beet tops
Tomatoes
Carrots
Chard

Kale
Rutabagas
Turnips
Corn

7. Draw a line under any of these that you would like to know more about: vitamins, minerals, proteins, starches, sugars, and regulating foods.

Very few improperly balanced lunches were chosen by the fourth grade, but a few children were making no real effort to eat what they had ordered if it did not strike their fancy. Still others tried to get out of the lunch room after eating a small amount of their order. This was noted, and finally the class voted that they should check themselves daily on some form of chart to see if they were improving in the matter of eating what they had ordered. The accompanying chart was used by each child for a month.

*Record of Daily Lunches*

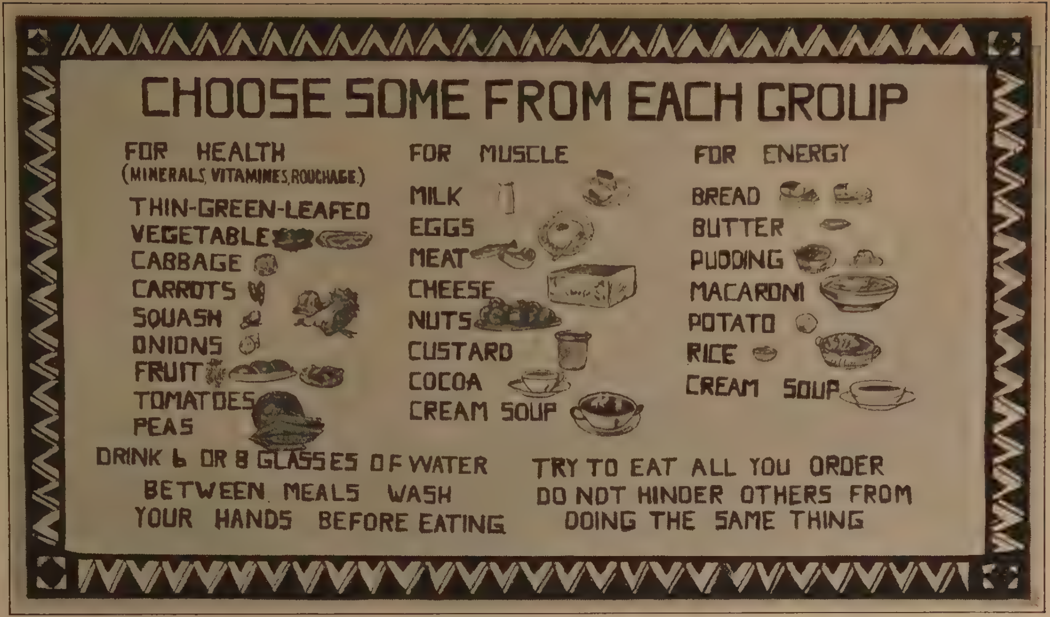
*I chose these today for health:* CHECK HERE
  Thin-green-leafed vegetable
  Cauliflower
  Carrots
  Turnips
  Squash
  Onions
  Fruit
*For muscle:*
  Milk
  Egg
  Meat
  Cheese
  Nuts
  Custards
  Cocoa
*For energy:*
  Bread and butter
  Pudding
  Macaroni
  Potato
  Rice
  Cream soup
*I ate all I ordered.*

The scheme worked, and principally because the children themselves initiated it. They wanted to be considered independent and responsible members of the school family.

With the help of the household-arts and the fine-arts teachers a large food chart was made and hung in the lunch room as a daily reminder to all who used the lunch room of the foods to be included in their daily selections.

Among the first group activities in September was the preserving of some of the fruits that would soon disappear from the market, such as grapes, plums, and crab apples. Other fruits, such as grapes and prunes, were dried to show how raisins and dried prunes are made. The class started a little jelly business and sold jams and marmalade at a small profit. A visit to a retail store in the neighborhood showed the class current retail prices. The lunch-room manager told them wholesale prices. The class found that it could not compete with the wholesale prices; so a price somewhat below retail prices was set, and a smaller profit but still a reasonable one was made. This was possible because the class had no rent, no wages, and no equipment expenses to pay. The only cost was for actual materials — sugar, fruit, and glasses.

The pupils discussed these matters and came to understand why commercial retail prices were higher than theirs should be. Jelly was bought for twenty cents a pound in the lunch room. The lunch-room manager offered to pay the class twenty-five cents a pound for the homemade jelly. The cost to the class was twenty-two cents a pound, and one pound was so large a quantity to sell to one customer, when there was such a demand for it by the mothers of the children, that the class decided to put the jelly up in smaller quantities. In this way



CHOOSE SOME FROM EACH GROUP

| FOR HEALTH<br>(MINERALS, VITAMINES, ROUGHAGE) | FOR MUSCLE | FOR ENERGY |
|---|---|---|
| THIN-GREEN-LEAFED VEGETABLE | MILK | BREAD |
| CABBAGE | EGGS | BUTTER |
| CARROTS | MEAT | PUDDING |
| SQUASH | CHEESE | MACARONI |
| ONIONS | NUTS | POTATO |
| FRUIT | CUSTARD | RICE |
| TOMATOES | COCOA | CREAM SOUP |
| PEAS | CREAM SOUP | |

DRINK 6 OR 8 GLASSES OF WATER
BETWEEN MEALS WASH
YOUR HANDS BEFORE EATING

TRY TO EAT ALL YOU ORDER
DO NOT HINDER OTHERS FROM
DOING THE SAME THING

A LARGE FOOD CHART WAS MADE

The fourth-grade class made this food chart. They were assisted by the fine-arts and household-arts teachers, as well as by the classroom teacher more customers could be satisfied and more money made. It was found that small jars or packages gave better profit to the retail dealer. If a customer wished to buy economically he should buy in larger quantities. It was discovered, moreover, that wholesale canners and preservers buy sugar by the ton or by the carload, and fruits by the crop or carload. Although the class bought at a slight reduction from the regular retail price because it bought fifteen pounds of grapes at once, still it could not begin to compete with prices of jams made in factories.

Many odd-sized jelly jars were brought from home. This saved cost, but made necessary the accurate measuring and weighing of each jar, empty and full, so that each customer could be treated fairly. Even the jars were of different sizes. There was a fitting price on each.

The members of the class were the storekeepers. The mothers were the buyers for the most part. A few outside orders, however, were filled. A little booklet made by the pupils told the story of the enterprise.

### *How the World supplies us with Valuable Foods*

Encyclopedias and library references were consulted. The eleventh grade in the high school assisted in this library work and showed the children in the fourth grade how to use encyclopedias and card indexes and how to take notes and later write them in more complete form. The class then put all this descriptive material into an illustrated booklet which has two sections — one on United States fruits, and the other on foreign fruits. The chapters contain descriptions of how the fruits grow, something about the countries or places where they grow, and how they are shipped to New York. Maps were studied, and blank ones filled in to show fruit sections with transportation lines to New York. Several good descriptions of the tropics were read aloud, and scenes of tropical vegetation were painted. The climate and people of the islands of the Pacific and of Central and South America were studied by the pupils. One boy's father had been with a fruit company in Central America and gave first-hand information about bananas. Another boy borrowed pictures of the Philippines from a friend and showed them with the reflectoscope.

The work with maps and railroad and steamship folders so interested one of the boys that he began collecting railroad folders, writing to all offices for them. He was always able to take the lead in showing any new map locations to the class.

Although foreign and tropical fruits were of special interest to the pupils from the first, our own great fruit and vegetable sections were not neglected. Many interesting descriptions of the growing, packing, and shipping of these products to New York were read in class. A moving picture of fruit-growing, picking, and packing was shown at school.

The class discussed discouraging problems of the New York State apple-grower, who finds no market for his finest apple crop but must send his fruit to the city with no profit to himself. They found that New York State apples were sold at the same price in New York City as those that came all the way from Washington and Oregon. The children became conscious of many interesting industrial problems. What are some of the picking and packing difficulties? Why are New York apples sold for the same price as Western apples? Why are the New York apples not so well packed?

It is almost impossible to indicate any sequence in the list of activities which accompanied the development of the food study. Since the actual development of a similar unit will vary with different teachers under the same conditions or with the same teacher under different conditions, the order of the activities will be comparatively unimportant.

### *List of Activities*

Cooking grapes for jelly.

Making menus.

Selecting a lunch from different combinations which were made during class discussion.

Raising questions about foods — their source etc.

Keeping records of lunches. Comparing them with the chart which showed well-balanced meals.

Studying vitamins and minerals and other food values.

Cooking fruits and vegetables — recipes: grape marmalade, plum jam, baked apples, baked potatoes, raw-vegetable salad, fruit salad, rice pudding, macaroni and cheese, tapioca pudding.

Drying fruits; testing for starches.

Visiting fruit and vegetable stalls in the neighborhood and finding where fruits and vegetables come from.

Collecting foreign fruits, United States fruits, New York State apples; comparisons of prices.

Operating a jelly business.

Making a jelly book.

Making a fruit book; with information, illustrations, and maps.

Taking food tests on information gained.

Planning food charts as a check for individuals; used in the room to help children to see improvement.

Making a large food chart to hang in the lunch room to help others.

Making a book of recipes and menus for simple lunches; to be used at home when children are allowed to work in the kitchen.

Planning, marketing for, and serving luncheons.

### *Summary of Work in Subjects of Study*

*Reading*

- Each pupil selected a fruit or vegetable for individual investigation and did library reading to get his information
- Special reading of class booklets made by the pupils
  - "The Fruit Book"; "The Jelly Business"
- Reading menus and food charts

*Composition*

- Writing a special report
- Arranging programs for other groups. These call for oral and written work
- Making original poems on orchard, farm, or garden
- Planning luncheons and writing invitations and letters
- Writing a fruit book. Writing a book on the jelly business

*Geography*

- Location of fruit centers
  - Central and South America
  - Italy
  - New York State, New England, Florida, California
- Truck farming as an occupation
- Effect of climate, altitude, and latitude on fruit-growing
  - Transportation of fruits and vegetables
  - Railroad and steamship lines
  - Life in the tropics — temperature; physical geography

*History*

- Primitive ways of getting food

*Science and household arts*

- Food values: proteins, carbohydrates, fats, minerals, and vitamins
- Balanced meals
- Methods of canning, of preserving, and of making jellies
- Effect of boiling
- Cold-pack method
- Fermentation
- Keeping apples, potatoes, etc.
- Luther Burbank

- Insects that harm fruits and vegetables
- Home garden and fruit trees
- Winter protection of buds
- Seeds
- Tests for starch
- Removal of fruit stains

*Fine arts*

- Making covers for a fruit book
- Painting pictures of fruits and vegetables to illustrate booklets
- Making and decorating a food chart

*Arithmetic*

- Recipes: weighing, measuring
- Profits to the farmer
  - Buying; selling
  - Retail; wholesale
- Cost of preserves, of jellies, and of cans of fruits and vegetables
  - Comparison with store prices
  - Retail overhead
- Fractions in health charts and recipes

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## *FOURTH GRADE*

### A Curtain Unit

Not all units are equally rich in all aspects. In the Curtain unit, which came early in the year, the children had an opportunity to engage in a large number of activities, and a constant demand for improved techniques was felt. It is with the idea of showing in a comparatively simple unit the relation between techniques and child-purposing that the following unit has been included.

### *Stimulation*

When school opened in the fall the children were much concerned because the room was somewhat dull in color. They wondered what could be done to make it more cheerful. Someone suggested that curtains would brighten it up. The idea was well received by the other members of the class, but at once numerous problems arose in their minds. These were the questions asked:

Aren't the windows too large?
Could a style be found that would look well?
How could we have curtains that would brighten the room without excluding too much light?
What colors would brighten the room?
Should the curtains be plain, figured, or otherwise decorated?
What material should be used?
How much would they cost?
Where could the best material be bought most cheaply?
If we decorated plain curtains, how could it be done?

The questions furnished a basis for much discussion. Various styles of curtains were observed at home and reported upon to the class. Pictures of curtains were cut from magazines and brought in. It was found that windows could be made to appear broader, narrower, shorter, or taller through the arrangement of the draperies. A feeling for proportion was apparently being developed.

It was concluded that the windows were not too tall if a style of curtain that would not accentuate the height was selected.

The question of admitting enough light was next brought up. Curtain materials were observed and samples were brought. Some pieces of cloth were too heavy; some were so thin that they added nothing to the appearance of the windows. It was felt, however, that some of the materials might lend color without being too heavy.

After these preliminary discussions the class decided that it would be desirable to have curtains for their windows.

The greatest problem of all was now to be met: who should pay for the curtains? Several suggestions were made. It was decided to write a letter to find out whether the school would be willing to pay for the materials. A letter was composed by the group. After it was sent the reply was eagerly awaited.

The decision was that the curtains would be paid for by the school if they did not cost too much and did not keep out the light.

### *Activities*

A trip was taken to see the prices and widths of materials and to obtain samples.

A business letter was written to a department store requesting samples.

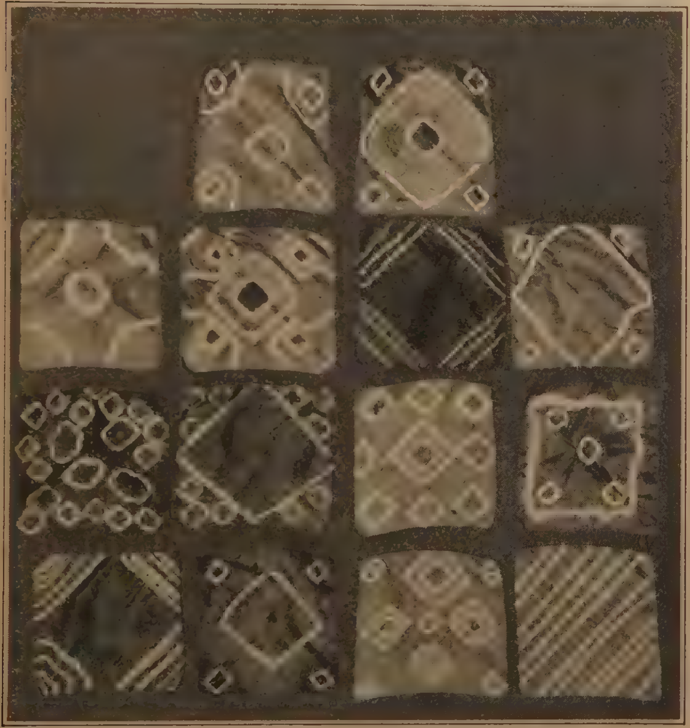
The windows were measured and the amount of material was estimated.

The cost of the various materials was figured.

Possible ways of decorating materials were discussed.

Experiments were tried with tie-dye designs.

Designs were made which could be used in block-printing.



EXPERIMENTS WERE TRIED WITH TIE-DYE DESIGNS

The stimulation for this kind of work came from the Curtain unit

Colors were studied for their effect on the appearance of the room, the lighting, and the people under their influence.

Linoleum blocks were made.

Samples of cloth were washed to determine whether they might be laundered without fading, shrinking, or stretching.

Information was secured in regard to the cost of dry-cleaning at various shops.

Curtain rods were priced.

The merits of block-printed designs, tie-dye designs, and cretonnes were discussed, and the decisions were made in favor of block-printing on unbleached muslin dyed to the shade chosen.

The total cost of materials was determined and permission obtained to make the necessary purchases.

Committees washed and dyed the muslin.

Committees measured and cut the cloth. All served on various committees to do the basting and sewing.

The working of a sewing machine was demonstrated and tried by the children.

The design was printed on the curtains by several children in turn.

A record of the activity was kept in the class memory book.

A report was given in an assembly program, telling of their experience. Mothers were entertained after the curtains were up.

A trip was taken later to a department store to see pictures and hear a lecture on the process of manufacturing cotton cloth. A demonstration was given, showing the commercial printing of designs in several colors by a hand process. Comparisons were made with our own work.

A letter was written thanking the store for the courtesy.

### *Subjects of Study*

*Arithmetic*

Using linear measure in getting height and width of windows; using liquid measure

Studying proportion between quantity of dye and weight of cloth

Drilling for skill in fundamental processes

NOTE. In finding the cost of various materials multiplication with dollars and cents was necessary. The pupils learned how to multiply by a multiple of ten through annexing a zero. Using the multiplier of two digits other than the type mentioned presented a more difficult situation. It was necessary to stop and learn the process. However, another difficulty appeared. The pupils did not know the multiplication tables well enough to find a correct solution. They then resorted to the individual practice books in arithmetic. Multiplication combinations were studied until sufficient skill was gained to perform the new process.

Knowing simple fractions.

*Language*

Discussions: the assembly program and the party for the mothers gave occasions for much oral language
Writing business and social letters

*Handwriting and spelling*

Taking time for instruction and practice when special difficulties appeared in handwriting
Adding new words to the spelling lists as they were needed

*Fine arts*

Designing block-printed curtain patterns
Planning color combinations

*Industrial arts*

Handling many kinds of fabrics
Studying the effect of cleaning on the fabric
Preparing unbleached muslin for dyeing
Making and dyeing the curtains
Using the sewing machine

## *FIFTH GRADE*

### WATER TRANSPORTATION

Over a period of years a rich Boat unit has developed in the third grade. So great were the possibilities in other leads into water transportation which were obviously too difficult for the third grade that it seemed desirable to experiment with the material in the fifth grade. There was also a real interest among the fifth-grade pupils in boats and their uses. At the beginning of the year, a boy brought to school a boat which he had made during the summer. This led to certain discussions and questions which carried the class further into the subject.

For the first three weeks of the school year this subject was considered in a general way in the class. Questions were asked and answered directly, if that was possible, or were given to certain pupils as an assignment for which they would be responsible the next day. Some of the questions were these:

Was it a person that discovered boats?
Do we really know when boats began?
Why did people need larger boats?
How did the first people who had really good sails fasten their sails on?
How did the Vikings tell where they were?
Why did the Egyptians have such a high prow to their ships?
When did the Romans first go on the ocean?
Why did we keep putting more sails on our ships?
Why did the Roman galleys have several banks of oars?
Why did sailboats change to steam?
How was the *Clermont* propelled?
What is the rotor ship?

The class saw that before such questions could be answered satisfactorily much study was necessary; so they went to work at once outlining their study in detail. The suggestions which were made by different members of the class were taken and compiled into one long mimeographed list, the basis for further organization and for the choice of topics for study.

The pupils had had some experience in gathering information, but this would be their introduction to rather extensive, independent work on individual topics. Before beginning individual work, therefore, it was decided to work as a group on one or two topics. Each pupil contributed to the class discussion. The individual contributions were woven into a report. The topics worked out in this way were "Primitive Boats and how they Began" and "Early Sails and how they Began." After this general piece of work together the pupils worked either in very small groups or individually on the different topics contained in the list which had been compiled or on new ones that had been added to it. This partial list shows the variety of subjects that were studied:

Primitive boats and how they began.
Development of ancient ships.
Ancient sails and how they began.
Literature of the sea.
Ports and dry docks of the world.
The life of a sailor.
How a ship finds its bearings.
Ancient sea trade.
Whales and whalers.
The story of a galley slave.
Anchors.
How Hudson discovered the Hudson River.
How the English colonies were settled.

Sir Francis Drake.
The clipper ship.
Routes of early explorers.
Chanteys.
Steamboats.
The sea travels of Joseph Conrad.
Lighthouses and their uses.

A pupil selected a subject to be studied either alone or with others. He gave a date on which he expected to have his work finished. When this date came and the work was completed, the class held a general meeting to hear the reading of the report by the pupil. Criticisms were given by the pupils, and a decision was made as to whether the report should be accepted in the form presented. If it was accepted it was filed with others; if not, the person who wrote it was asked to look it over and present it a second time for consideration.

During the course of the study a desire had been expressed in the class that they make what they called a "boat book" and have a copy for each pupil. This was to be made up of reports, poems, plays, and other written work of the pupils. As time went on, the book assumed such proportions that it could not be completed in its entirety, but several parts were finished by different committees and filed with the expectation that other fifth grades would carry the work forward.

The work on the reports was carried on in the school library, in the classroom, and at home. Material was procured wherever it could be found. Pupils helped each other and brought their own books to the room library for class use.

It was found that the criticisms coming out of the general class sessions were very helpful to all and gave ideas that were very useful. The pupils had practice in learning how to accept and give criticism. Some, of course, had more practice than others, but all were helped by this part of the work. They learned that criticism need not be adverse, and that when they criticized adversely there was also a responsibility to make constructive suggestions.

Out of the discussion and investigation of the topics which the class had set for itself, a study of the evolution of water transportation from its beginnings in earliest history through early boats of the Egyptians, Roman galleys, clipper ships, first steamboats up to and including oil-burners and rotor boats of today, with all the richness which such an outline suggests, became an absorbing topic, expressing itself through the writing of stories until it culminated, first, in making a book of linoleum block prints of ships and, finally, in the painting of a colorful frieze depicting the whole story.

In making the book of block prints each pupil chose a particular type of ship that he wished to draw. Before he could cut his block print of this ship it was necessary that he know about it, not only in general shape and appearance but in particulars, such as the number of sails, the placement and names of sails, the number of decks, the shape of bow, stern, etc. These points necessarily led him into reading of the time and events of which his particular type of ship was a part. This reading had its influence on the classroom work, which in turn gave impetus to the art work. The outcome of this part of the art work was that the class brought together the various blocks and, after printing them, had some booklets printed and bound. The cost of these was worked out, and each child paid the cost for a booklet of his own. Later a number of prints were used to illustrate a book that was being printed commercially from material worked out by a third grade two or three years before.

Toward the last of January work began on a frieze which had been under consideration for some time. Early in the year the class had talked about this frieze, but had realized that they did not have the information necessary to make it. It was to be a history of the evolution of the boat from the earliest pictured model of ancient Egyptian times down to the present. This required a sweep of history that the pupils could not have until they had had some time to study the subject.

When they finally decided that it was time to begin the frieze, several pieces of work were necessary before it could actually be painted. They needed to know the placement in history of the different types of ships. This was soon ready, because they had been keeping a time line. Yet the immediate demand for this information caused them to scrutinize their work once more and in a different way.

The frieze was to be painted on burlap hung around the walls of the room. A committee was appointed to hang the burlap, measure it, and allot to each individual his share and place. This was done, but after some had started to work on the burlap it was found that the space had not been allotted correctly, and the story of the ship would be all mixed up if it should be carried out as the committee had directed. The class decided to appoint a new committee, turn the burlap over, and begin again. This time things went better, and places were assigned correctly.

Before and during the time the burlap was being hung each pupil was busy with his charcoal outline, which he was going to transfer to the burlap as a guide to his

IT WAS TO BE A HISTORY OF THE EVOLUTION OF THE BOAT

The frieze was painted by the fifth grade painting. Also the paint committee had been busy getting the paints mixed. Soon the charcoal outlines began to appear on the burlap, and then painting began.

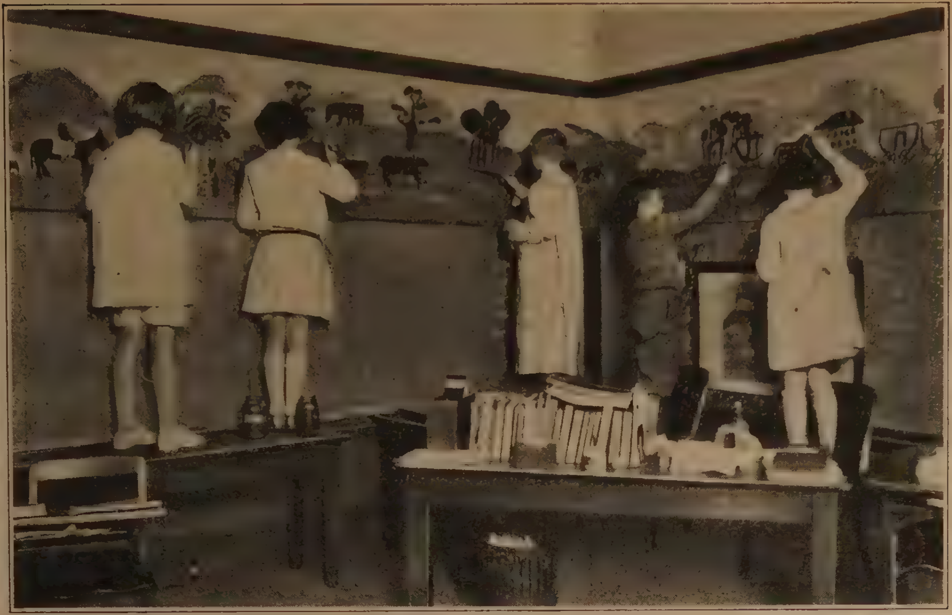
Assembling information and making the frieze lasted until the end of the year. When it was completed, it showed the evolution of the boat from the earliest kind to the modern steamboat and rotor as the class had planned.

The work with the frieze furnished many occasions for group work and for individual and committee responsibilities, and it provided an unusual opportunity for getting all to feel that there was a common job to be done. Needless to say, the pupils were very much interested in the frieze, both while it was being made and after it was completed.

The shop work carried on in connection with the Transportation unit was confined wholly to the making of boats. The class decided that they would first make a careful plan for the boats. Some children chose to work out silhouettes rather than to work in the block wood.

The class reports give evidence of a very rich opportunity in this unit for cultural content. The literature of the sea is varied and interesting. The different subjects of study as they have been divided in the school curriculum are here found intermingled. A story of the sea may be read primarily for its literary value, and at the same time the pupil may learn much real geography and history from it. In the course of the work the class did study geography and history, but always with a feeling that back of the particular topic with which they were dealing at the moment was a wonderful setting that gave meaning and atmosphere to the thing they were then doing.

In dealing with any particular subject one develops a



THE FRIEZE WAS PAINTED ON BURLAP HUNG AROUND THE WALLS OF THE ROOM

This frieze shows land transportation

specific vocabulary. So it was in this study. Besides the use of spelling words taken from such sources as the Horn-Ashbaugh lists, the class found in the work many special words the use of which was necessary for expressing accurately their ideas. Of course many of these words were new and needed to be studied. Some were words of general use; others were terms relating particularly to the sea and sailing.

Opportunities came up for the use of science. There was first the determination of why a boat floats. Then later came the question of sea navigation, which involved the discussion of such instruments as the sextant and how it is used and of measurements by degrees and angles. One day a boy asked, "How did the Vikings tell where they were, and how did they tell time?" This question led into talking of how time had been told by different peoples, the relation of the sun and stars to the earth at different times of the day, and degrees of longitude and latitude.

Whenever there was something to see somewhere outside the school that related to the study, and the conditions were such that it would give ideas for future work or show the things about which the class had been studying, they went to see it. During the course of the year an old square-rigger which had been turned into a museum for ship models was docked in the Hudson River, near the school. The class went to see it and found many of the things about which they had been reading. Again, they took a general trip across New York Bay to Staten Island in order to see different types of harbor boats. The Brooklyn Navy Yard gave an idea of how ships are cleaned and repaired. Various other trips were taken, but always with a definite understanding of why they were being made and what they would contribute to the work on the Transportation unit.

The class was fortunate during the course of the year in having one or two interesting exhibits from outside the school. A well-known painter of sea pictures lent the original etchings which he had made for a book called "The Story of the Ship." His book had been used in the classroom work. An exhibit of old ship models was lent.

The pupils derived great pleasure from arranging these exhibits in the hall cases so that all might enjoy them. The exhibits were helps to the work the class was trying to do and also were interesting in themselves regardless of any connection they might have had with the work.

The class planned an assembly program as a summary of the year's work. They began by looking over the work they had completed. The date for the assembly was assigned several weeks in advance. They knew what they had completed and tried to find out how much more would be done by the date set. Then from these possibilities they had to select those facts which would give the most unified conception of the whole piece of work. An attempt was made to suit materials to individuals, to give each what he was interested in doing and could do best. Besides the individual pieces of work, there were some things the class could do, such as sing chanteys which had been learned in the music periods and give some dances learned in the gymnasium.

Each child had an opportunity to construct a program as he thought it should be. Thought was given to the placing of the different parts and the time to be taken. These individual efforts were all brought together, and from them the group worked out the program as finally given. Individuals went through the different parts in the room before giving them in the assembly, but never with the idea of absolute precision. Much was left to individual feeling and action, and only the facts concerned in the various talks were examined carefully.

This is the program as finally worked out and presented by the class:

*Why the History of Ships is Important to People*

How long we have had ships. (*This involved the use of the time line they had made during their study.*)
How boats and sails began.
Modern ships.
A full-rigged ship.
Poems and books about ships.
Ports of the world.
Lighthouses and their uses.
Trips we have made.
Joseph Conrad: a writer of sea stories.
What the sea makes one feel.
How we made our frieze and block prints.
Chanteys and how they are made.
Three chanteys. (*Sung by the whole class.*)
Dance. (*Sailors' hornpipe by the girls of the class.*)

The pupils gradually became more proficient in such things as the use of books, in gathering facts, in ability to see things develop over a longer period of time, and in working as a social unit.

It is clear to those who have been concerned with the development of the unit that much more experimenting will be necessary before it will become entirely evident as to which of the numerous leads should be pursued.

Many books were used in the work. A list of books pertaining to the sea and things about the sea follows:

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## *FIFTH GRADE*

### THE SCHOOL BANK

The school bank is a fifth-grade undertaking of great importance in the life of the school. It has had a gradual development over a period of six years. It grew from the simple keeping of lists of expenses and figuring the lunch charts for the room each week. It has been, and is, an attempt to use existing conditions in the school to provide practice in handling money, to learn correct current business procedure, and to take advantage of a rich field of material for drill in the fundamentals of arithmetic. Each incoming fifth-grade group has taken the organization as developed by the previous grade and during the year has made some additions to the procedure until now it has grown into a fairly representative bank. All this has been developed under the direct supervision of the teachers.

#### *Organization*

The organization of the bank consists of an advisory board (teachers), board of directors (teachers and pupils), and bank officers (pupils). The bank business is divided into four departments, all under the direction of the teacher in charge of the room and the pupil who is business manager of the bank. The business manager has the services of two bookkeepers, two clerks, and two file clerks for the general bank work.

The business manager is held responsible for meeting the problems of the bank. It is for the more difficult problems that he seeks advice from the president, who is a teacher.

### *The Departments*

The four departments may be briefly described as follows.

The *Receiving Teller's* department is located in one of the fifth-grade rooms and is in charge of fifth-grade pupils. The receiving teller accepts money for deposit in the Lincoln School Bank. This is for checking accounts only. The depositor proceeds as he would in any bank. He presents his money, deposit slip, and pass book to the teller, who counts the money, initials the deposit slip, and enters the correct amount in the pass book. The depositor then enters the amount of his deposit in his check book and finds his new balance.

At the end of the day the teller makes a report of his business and gives the manager the report, all deposit slips, and the money. The report is accepted if correct. The deposit slips are given to the bookkeeper to enter on the bank records, and the money is placed in the manager's cash box.

The *Paying Teller's* department is in another fifth-grade room in charge of the pupils. The paying teller cashes the checks of the bank patrons. It is his responsibility to see that the checks presented are properly written and indorsed. The person cashing the check is required to count the money before he leaves the cashier's window. The cashier has a cash box of one hundred dollars in various denominations. At the end of the day the cashier makes a report of the money and checks on hand and gives it to the manager, who audits it. The cashier makes an adding-machine total of the checks and exchanges them for cash with the manager. In this way he renews his cash and knows if there is any shortage.

The *Interest department* is in one of the sixth-grade rooms and is in charge of the pupils. This department accepts only deposits that are to be placed on interest. It is done in much the same way as for the checking accounts. However, the deposit slips are of a different color, and the entry is made in another part of the same pass book. The cashier balances his records and deposits his surplus funds on interest in a New York City bank. The school bank pays 1 per cent interest every three months on the even dollars. Withdrawals may be made at any time by writing a counter check. A record of the withdrawal is made in the pass book. Surplus funds from the checking-accounts are also placed on interest for providing funds for the interest department.

The *Collection department* is in charge of another sixth-grade room. It receives the money paid by the pupils of the fifth and sixth grades on their school accounts. The pupils cash their checks at the paying teller's window and take their monthly statements and money to the collection department. The money is counted, and if it agrees with the official bill as listed by the managers of the Supply Room (a school store in the building), they accept it and receipt the pupil's statement. Money thus collected is deposited in the school bank to the account of the Elementary-School Division of Accounts. At the end of the month this money is withdrawn by a check on the school bank. In exchange for this check one on the city bank payable to the order of the Lincoln School is received. This check is given to the Supply Room. The collection department is responsible to the Supply Room for the total amount due from all the pupils of the fifth and sixth grades. In case any bills have not been paid, they are carried over until the next month. The pupils take turns in holding the various offices, although they sometimes act as assistants if they are not capable of taking the complete responsibility.

The banking hours on school days are from 8:45 to 9:05, from 1 to 1:05, and from 2:45 to 3. The collection department is open only from 8:45 to 9:10.

### *Equipment*

The equipment in use in the bank has been added as the needs arose. Three of the rooms use ordinary tables and chairs for conducting their business. One room has constructed a simple and inexpensive structure of wall board and lumber. This was planned by the group and built by some of the boys as an industrial-arts problem.

Other equipment consists of five small cash boxes, one for each department and one for the manager for surplus funds and change. These are labeled and kept in the school safe when not in use. This year the bank has had the use of a simple adding machine to assist in the work. All the reports from the departments are verified by adding-machine totals, and the individual records are prepared for auditing each month.

### *Services Performed*

The school bank performs a real service to the school and to the individual pupils.

The service for which it was originally designed and which now occupies its major efforts is the handling of checking accounts for the pupils of the fifth and sixth grades. Money is brought from home and deposited. This is withdrawn in cash as needed to pay school expenses for lunches, books, and general supplies. For those pupils having charge accounts for school expenses the withdrawals occur once a month as the statements are rendered. A few who pay cash withdraw as they need it. This privilege requires the approval of the parents.

The treasurers of all the school organizations are encouraged to open a checking or savings account, or both, in the school bank. This opportunity is open to thirty or more of the permanent and temporary social and business organizations in the high school and elementary school. The advantages of this service are obvious. It provides a safe place for all funds of the organization; it allows all bills to be paid by checks drawn on the school bank. Where payment is outside the school, the bank exchanges a check on the city bank for one drawn on the school bank. An account in the school bank gives an accurate record of all income and disbursements of the organizations; it provides a businesslike method of handling the treasurers' funds and a means of caring for balances during long vacations, making these balances available to the newly elected treasurers the following term. Should the designated treasurer not return, the funds are safe and may be drawn upon by any newly elected treasurer. Another advantage is that all funds are transferred to the new treasurer as a bank balance and not as so much loose cash. The bank records show at all times the financial conditions of the various organizations. These records are available to the school authorities. The auditors make use of the bank statements and canceled checks of the treasurers in verifying the financial report handed in for auditing at the end of the year by each treasurer.

Organizations having surplus funds may place them at interest in the savings department. With the proper security an organization may secure a small short-time loan.

DIFFERENT PHASES OF THE BANK WORK ARE CARRIED ON IN THE DIFFERENT ROOMS

The bank booth (see page 335) is located in one fifth-grade room. The other rooms use ordinary tables and chairs for conducting their business

In grades below the fifth the payment of school expenses is different from the method described and varies in each of the grades. The bank welcomes the opportunity of giving them what service it can. In some cases it carries a checking account for the teacher. The teacher deposits all the money brought by her pupils, usually five dollars per pupil. When they are ready to pay their bills the teacher submits a change sheet covering all the expenses of the entire class and writes a check for the total amount. The bank furnishes a metal cash box containing the exact denominations of money needed. In this way each child will have the exact change for paying his bill.

In addition to the accounts of the regular organizations the bank serves as a clearing house for funds collected for Red Cross, special benefits, sales, or drives conducted within the school. At times the bank has advanced change to pupils in charge of sales booths.

Since the bank has been in operation it is evident that it has encouraged better business methods in handling money by the individual pupils and by the various school organizations. The financial reports which have been submitted by the treasurers of organizations have been more satisfactory to the school auditors.

### *Checking and Savings Accounts in Outside Bank*

The school bank has a checking account with a city bank. This is a joint account in the name of the director of the school and the teacher in charge of the work. Both signatures are required for withdrawals. This arrangement provides a safe place for surplus funds, convenience for cashing checks on outside banks which have been deposited in the school bank by the pupils, easy access to the various denominations of money needed in the school bank or the conversion of excess small change into larger denominations, and the privilege of writing checks for pupils and organizations of the school when they wish to send money outside the school. These checks are written for those requesting them and are given in exchange for cash or a check drawn on their account in the school bank. When the canceled check is returned by the city bank, it serves as a receipt or record for money paid out and may be filed as such when a treasurer's report is submitted to the school auditors. Not the least important service is the opportunity it gives to secure advice and counsel regarding banking business and the dignity that this association adds to the school bank.

All money taken in by the school savings department and some of the surplus money from the school checking accounts is placed on interest in the outside bank. Interest thus secured is used to pay the interest on the accounts in the school savings department.

### *Coöperative Efforts*

Coöperation has been the keynote in the development of the bank. This is true of both teachers and pupils. There have been many meetings of the four grades to discuss suggested improvements or to learn better how to conduct the business of the bank. At these meetings teachers and pupils have taken part in discussions. Each year an assembly is given for the elementary pupils for the purpose of showing how the bank is used and what the various officers do. Every effort has been made to keep the parents informed about the bank and how it operates, because their coöperation in the work has been needed.

The elementary-school council gave the bank twenty-five dollars as an emergency fund. The bank books are audited twice a year, but each month those in charge of the work unofficially audit them and render a statement to each pupil which shows his balance, with the request that he compare it with the balance in his check book. In case these two do not agree, this fact is reported to the bank, and the error is corrected.

Some helpful forms and suggestions have been worked out by the pupil managers of the bank. The officers of the bank collected samples of forms from several city banks; with these as guides and with special difficulties of the pupils and special needs of the school in mind they developed their suggestions and forms and presented and explained them to all those who used the bank.

### I. SUGGESTIONS FOR DEPOSITING MONEY IN THE LINCOLN SCHOOL BANK

1. The banking hours are from 8:45 to 9:05 A.M. and from 1 to 1:05 P.M. Please make deposits during banking hours.

2. In making a deposit please bring your money, pass book, and check book. Obtain the deposit slip from the table or from the cashier's window.

3. Do not leave your money on the counter or table while writing your deposit slip. Keep it in a secure place. The cashier is not responsible for it until it is given in at the window with your deposit slip. Don't expect the cashier to care for it while you write your slip.

4. Enter deposits on the correct line.

Cash (Coins)
Bills (Paper money)
Checks

5. Be sure to do all bank business in ink. Use a blotter.
6. Write your name as you do when you sign your checks.
7. It is important to enter the correct date on the slip.
8. Be sure to enter the correct total at the bottom of the slip.

9. Write your figures large so that they may be easily and accurately read.

10. Use no dollar sign on slip.

11. When writing dollars and no cents omit the two zeros in cents column.

12. Do not change or write over figures — write a new slip and destroy the old slip.

(The list had twenty-seven items.)

## II. CASHIER'S FINANCIAL RECORD

Cash

| | | | |
|---|---|---|---|
| Bills: | Tens | | |
| | Fives | | |
| | Twos | | |
| | Ones | | |
| Coins: | Halves | | |
| | Quarters | | |
| | Dimes | | |
| | Nickels | | |
| | Pennies | | |
| | Total | | |

Receipts

| | | |
|---|---|---|
| Cash | | |
| Checks | | |
| Total | | |

Date__________

Cashier__________

Assistant cashier__________

Record audited and found to be correct

__________
*Manager*

## III. FORM NO. I. DENOMINATIONS OF MONEY NEEDED

Month Ending _ _ _ _ _ _ _ _ _ _ _ _

| Teacher | | | Bills | | | | Coins | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Pupil | Amount | | 10 | 5 | 2 | 1 | H | Q | D | N | P |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
| Totals | | | | | | | | | | | |

## IV. FORM NO. II

(Used for Ordering Mid-morning or Afternoon Lunch)

GRADE ________ ROOM ________ DATE ________ to ________

| NAMES | MON. | TUES. | WED. | THURS. | FRI. | M | O | A | C | TOTALS |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |
| PRICES | TOTALS | | | | | | | | | |
| Milk | | | | | | X | | | | |
| Orange | | | | | | X | | | | |
| Apple | | | | | | X | | | | |
| Cracker | | | | | | X | | | | |
| | | | | | Total | | | | | |

## V. SUGGESTIONS BY THE LINCOLN SCHOOL BANK FOR PROPER USE OF CHECKS

### WRITING THE CHECK

1. When withdrawing money for cash from a bank write the check payable to your name and indorse it.

2. Always write your check in ink.

3. Write neatly and large enough to be easily read.

4. Write the month in full.

5. Always fill the money spaces with a neat wavy line so that the amount cannot be changed or added to.

6. Write the correct amount in figures and in words.

7. Always write your cents as a fraction, as $\frac{75}{100}$, large enough to be read easily.

8. When writing the amount on a check write it this way:

*Three and* $\frac{75}{100}$ ~~~~~~ *Dollars.*

9. Write dollars and no cents, as,

(In writing):

*Three and* $\frac{xx}{100}$ or,

*Three and* $\frac{no}{100}$ or,

*Three and #*

(In figures):

*$3* $\frac{xx}{100}$

*$3* $\frac{no}{100}$

*$3 #*

10. In writing a check for less than a dollar write it as:

*Only Seventy-eight Cents*

*$* $\frac{78}{100}$

11. Never neglect to sign your check.

12. Always write your signature the same way.

13. Don't change the writing or figures on your check: destroy the old check and write a new one.

(There were these sections also
Concerning check stubs
Indorsing the check
General suggestions)

## *SIXTH GRADE*

### HOW MAN HAS MADE RECORDS OR BOOKS THROUGH THE AGES

The story of books and how they came about is a fascinating one. Children are surrounded by books. Why not help them to use them intelligently and to learn to love and appreciate them more fully? Through such a study one soon acquires a personal and intimate feeling for books of all kinds. Not only is there an intellectual appreciation, but an interest in the art side of a book. The child realizes that through books, as a means of recording the activities of man, he is able to understand the past and its effect upon the present. The story of making records goes back into prehistoric times. Later, people depended on the professional story-teller for the knowledge of their current and past activities. History tells how early civilizations attempted to record their deeds so that they might live after them. There is the story of the alphabet and how it came about; there is the story of how books were illuminated by the monks. The whole is a romantic story of how men invented ways of reproducing their thoughts.

### *How the Unit of Work came About*

In the upper grades of the elementary school, particularly the sixth grade, the teacher is concerned with a larger body of content material than are the primary teachers. The sixth-grade pupil is not satisfied with an immediate answer to his question. The answer generally involves much content material, and research on his part, as well as on the part of the teacher, is necessary before a satisfactory one is found. Content material in the form of isolated subjects of study does not satisfy this need, for he is still a child and loves to be active and doing things.

Since she had observed the teaching of printing and the making of a hand-sewn book advocated by industrial arts departments for the sixth grade, and had become convinced through this observation that these activities were real child activities in which the child was wholeheartedly interested, it seemed to the classroom teacher that much of the educative value of the activity was lost because the industrial-arts teacher did not have the time to give the rich-content side of the work and the grade teacher could not give it since she was teaching the same children American history, geography, etc. The present unit of work grew out of this idea. The possibilities in this study seemed so great that it was decided to experiment with the rich content offered by the history of records. This would mean that the fields of history, geography, and English would be contributing to the life of the child in a more meaningful way, since he would use the content of those fields in solving specific problems. The subject matter of the grade, then, would be an outgrowth of the carrying out of the activities offered by this particular unit of work.

### *The Development of the Unit of Work*

The development of this unit of work must be considered as merely suggestive. It is not meant that the procedure should apply necessarily to any other situation. The subject matter suggested is merely a means for growth for each individual and not an end in itself.

### *Two Approaches to this Unit*

With one group of children who were mature and full of initiative, the teacher discussed possibilities for the year's work and asked what they desired most to do. Many responded that they desired to publish a real magazine. The teacher then inquired if they had not had a magazine in other grades. Their answer was, "Yes, but the kinds they had were not real ones." They gave, as an example, "The Third-Grade Newspaper." This was a wonderful lead. The teacher, being the best judge, selected this response to lead them into the study of records. She knew that it would offer them an active school life for the year. So it was decided to publish a real magazine — real from their point of view. From this idea of the magazine started the discussion of recording our own activities. Recording our own activities led into the study of "How Man Has Made Records," or "Books through the Ages." In the words of the children came the inquiry "How did books come about, anyway?" They proceeded from this point into the whole study.

With another group of children, less mature and somewhat lacking in initiative and most willing to be led, the approach was quite different. In discussing the possibilities for the year's work their response was, "Let us do what your children did last year." These children had been part of an audience where the class of the previous year had presented the study at an assembly. They were most willing to sit back and let the teacher hand out suggestions for the year's work. Believing that this does not bring about real growth on the part of the child, the teacher did not hand out suggestions in order to start the unit of work, but she watched for a natural lead. It came from the first assembly of the year, which was on Egypt. Two of the teachers of the elementary school had gone to Egypt during the summer and were giving an account of their trip. It was so stimulating that, on returning to the class, the children asked many questions about Egypt. There were few questions on modern Egypt; in fact, the record shows only two. The other questions were on Egypt's religion, her pyramids, the strange symbols on the different tombs, etc. In trying to answer these questions an interesting study developed on the early history of Egypt. It brought about inquiry as to how we ever came to know what her ancient history really was. This led into the study of papyrus as a plant and its use to the Egyptians. A trip was taken to the Bronx Botanical Gardens to see papyrus growing and to secure some of it in order to make paper as the Egyptians had done. This brought about the study of Egyptian records etc., and then led on into earlier ways of recording.

One may easily see the differences in these two approaches and in their applications, but he might inquire as to a situation where there were really no possibilities for a natural lead. It is difficult to conceive such a condition if the teacher is alert and knows her job as a leader of a group of children. In such a case, however, the unit seems worth while enough to have the teacher present it. But there are many things the teacher could do to the room environment. She could have suggestive pictures on the bulletin board; she could arrange to take the class on a trip to a museum where they could see different types of early records which might stimulate them to make similar ones and find out their history. A very natural lead could be that of starting with books themselves — how they came to be. There are many ways the teacher could help in bringing about a natural lead.

### *A. Sources used throughout the Study for Stimulation and Information*

1. In a discussion on the possibilities for the year's work the teacher asked the pupils what they most desired to do. One response was a desire to publish a real magazine. From this idea of recording their own activities, they went into the study "How Man Has Made Records"
2. A visit was made to Dr. David Eugene Smith, who was kind enough to give the pupils a talk on early ways of recording. He showed them papyrus, clay tablets, wooden books, books made of palm leaves, etc.
3. On the bulletin board was a series of postal cards from the British Museum showing early records on clay. These were obtained by the teacher from the Industrial Arts Service connected with Teachers College
4. There was also a set of cards by Alexander on the "Evolution of a Book"
5. Trips were taken to
   - *a.* The Natural History Museum to see early writings
   - *b.* The New York Public Library to look over their books on the subject. (A hornbook and some very old schoolbooks were examined)
   - *c.* The Metropolitan Museum to see the Book of the Dead and to observe exhibits of Egyptian life
   - *d.* The Bronx Park to see the papyrus plant growing and to get some for making paper
   - *e.* The Metropolitan Museum to see architecture of the Middle Ages and old manuscript books. (The class saw statues of monks, abbots, — they saw also an hour book etc.)
   - *f.* The Barnard Cloisters showing architecture of the Middle Ages

  - *g.* Teachers College to see a demonstration of how an etching is made
  - *h.* A paper mill to see how paper is made

6. A moving picture on "The Making of a Book," distributed by Ginn and Company, was shown
7. Many reference books furnished by the Lincoln School library were used

NOTE. Not only were many of the trips stimulations for further activity, but they also were in some cases outcomes of preceding activities; for example, the trip to the paper mill.

### *B. Problems growing out of the Unit*

1. Problems on our magazine
   - How can we make our magazine a real one?
   - What shall we name it?
   - What kinds of committees shall we have?
   - Who will censor the material?
   - How many issues shall we have?
   - How shall we print it?
   - Shall we sell it?
   - What kinds of things shall we put into it?
2. How primitive man recorded
   - What were the very earliest ways of communication?
3. How early civilizations recorded
   - What were clay tablets, and how were they used?
   - What was the Rosetta stone? What do we mean by the Behistun rock?
   - What are wax tablets, and how were they used?
   - How was papyrus writing material made?
   - What do "cuneiform" and "hieroglyphic" mean?
   - What did a library look like in these early civilizations?
   - How was the first calendar made?
   - Who were the Egyptians? Assyrians? Phœnicians? Babylonians?
   - How did they make records?
   - What have they contributed to us?

- How did we come to know these early peoples?
- How did they live?

4. The story of our alphabet
    - Where did we get our alphabet?
    - How many years did it take to get it into our form?
5. Books of the Middle Ages
    - How did the monks make books?
    - Why did the monks do it?
    - What was an hour book?
    - What was an illuminated book?
    - How are parchment and vellum made?
    - What is the difference between parchment and vellum?
6. History of printing
    - Who first invented printing?
    - What was a wooden press?
    - What was an iron press?
    - What was the early printing press like?
    - How are graphs printed?
    - How are pictures printed?
    - How are books illustrated?
    - How are newspapers printed?
    - How are books printed?
    - Who were the men responsible for inventing printing?
    - How is ink made?
    - How many printing places are there in the United States?
    - How much matter is printed in the United States yearly?
    - How is type made?
    - How is type set?
    - Who first started printing in the United States?
    - What is the difference in the price of a book the monks made and one of our books today?
7. History of paper
    - How did paper originate?
    - What is paper pulp?
    - Which is better: paper made from linen or paper made from wood pulp?
    - Is it difficult to make handmade paper?

  - What is the difference between handmade paper and manufactured paper?
  - What makes water marks on paper?
  - How do we get different-colored papers?
  - Why are some papers so expensive?
  - What country leads in the manufacture of paper?

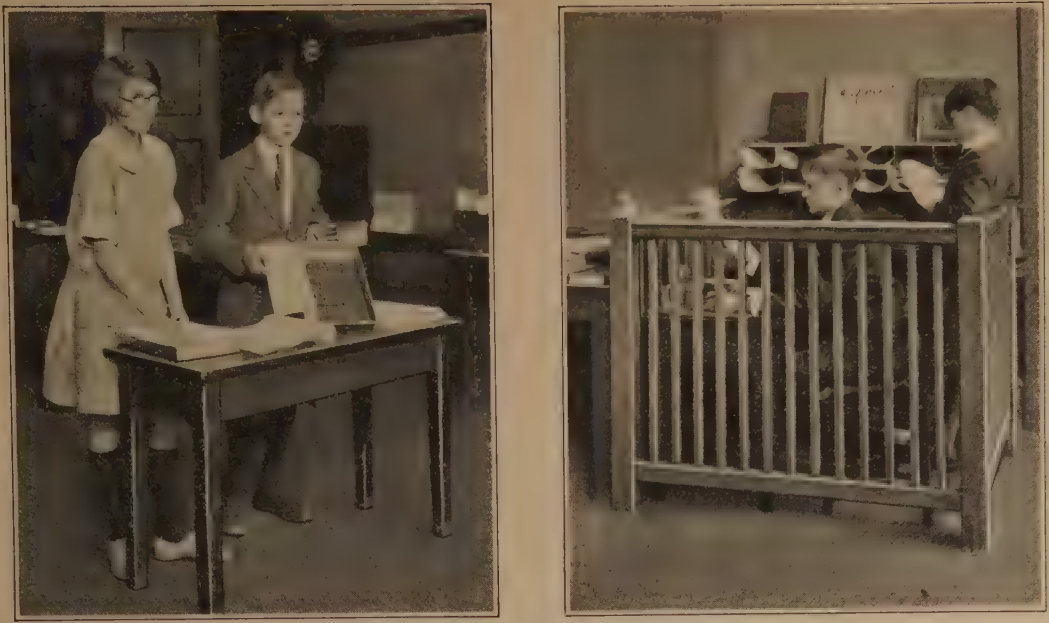
8. Associated problems
  - How is a handmade book made?
  - How can we show how long it took man to reach the modern way of recording?
  - What were the beliefs of early peoples?
  - How did our religion come about?
  - What is the history of libraries?

### *C. Activities Carried On*

1. Activities on the making of our own record
  - Publishing our own magazine
  - Planning how to go about it. (Named *The Papyrus Monthly*)
  - Discussing how to make it a real magazine. (Growing out of the discussions: editor in chief, assistant editor, reporters, artists, cartoonists, business manager)
  - Making hectograph material to be used for printing the magazine
  - Designing covers for different issues
  - Making linoleum blocks of the design so that many could be printed
  - Printing the covers
  - Writing material for the magazine
  - Censoring and editing material
  - Printing and arranging the material. (Five hectograph pans were used for printing the pages)
  - Computing the cost
2. Activities on primitive records
  - Making knotted cords, which tell a story or record some event. (In one case it was a string calendar)

- Putting facsimile of early records on stone, bark, bone, and leaves. (Showing picture writing)
- Searching for the history of the methods used by primitive man in recording his activities

3. Activities on records of early civilizations
    - Making tally sticks
    - Making wax tablets
    - Making clay tablets
        - (Illustrating cuneiform writing)
        - (Illustrating Greek and Roman alphabets)
    - Making a stylus
    - Making wooden books
    - Making papyrus writing material as the Egyptians did it
    - Making parchment
    - Investigating the life of these early civilizations — how they lived; what they believed in; investigating geographic influences
4. Activities on the history of printing
    - Forming committees to take over the different printing activities; committees on making chalk plates, casting type, showing two-color process (an example is a cover of the magazine)
    - Making a stereotype; printing an assembly program
    - Finding out the history of printing
    - Making a bibliography which grew out of the findings
    - Looking up statistics on printing — showing its growth
    - Visiting modern printing establishments
5. Activities on the history of a book
    - Planning a handmade book for individual needs. (Kinds: diary, poetry, etc.; color picture; size, end sheets, cover, number of sheets needed, cost of material)
    - Making the book
        - Folding of paper into signatures, arranging signatures for sewing, sewing the book, gluing the book ready for cover; making case cover, making end sheets; wood-block printing, batiking paper, marbling paper, hand-painting paper; putting book in cover



MAKING THEIR OWN MAGAZINE

The sixth-grade pupils publish a magazine

  - Discussing the care of books
    - (of early books — modern books)
  - Studying the different types of books
    - From the clay book to our present-day type of book; the cost of hand-made books and those made by machine

6. Activities on the history of paper-making
   - Making mold and deckle for paper-making
   - Making handmade paper from linen rags
   - Designing Christmas cards
   - Printing Christmas cards. (Few printed on pupil's hand-made paper)
   - Looking up the history of paper and its spread westward
   - Finding out how paper originated
   - Investigating the growth of the paper industry
   - Looking up statistics on the paper industry; showing its growth
   - Making a bibliography of the books used
7. Activities which unified the year's work
   - Planning and organizing the year's work so that we might select most of the interesting things to talk about and demonstrate at the assembly
   - Giving an assembly on "The History of Records"
   - Making an exhibit in a hall case on the activities of the year
   - Dramatizing "Gabriel and the Hour Book." (Played for the elementary school)
     - Writing the play, making the costumes, staging the play, learning an old Latin hymn suitable for monks to sing
   - Making an hour book. (Illuminating many pages and using the manuscript writing)
   - Completing a time chart which was started at the beginning of the year

### *D. Outcomes*

Growth in skill in handling tools of all kinds
Skill in handwriting
Habit of planning before executing
Use of reference material

DRAMATIZING "GABRIEL AND THE HOUR BOOK"

Above, stage property made by the pupils for the play. Below, a scene from the play

Skill in selecting only what reference material was really needed
Ability in reporting findings to the class
Improved study habits
Raised standards of workmanship
A scientific attitude toward reference material
A desire to solve one's own problem
An appreciation of the thousands of years it took man to develop present-day methods of recording
An appreciation of modern inventions in connection with printing
An appreciation of the relation of geographic influences on the activities of today
An appreciation of the differences in the processes used in making papyrus and modern paper-making
An appreciation of what the early civilizations contributed to present-day civilization
An appreciation of handmade books and paper
An appreciation of setting type by hand and typesetting by the linotype or monotype machines
A growing interest in old books
An appreciation of the beauty of books
A desire to handle books more carefully
An appreciation of freedom of the press
An investigating attitude
An appreciation of the differences in the life of the early civilizations and our own ways of living
An appreciation of "Necessity is the mother of invention" in many cases

*Specific information from the unit*

What primitive ways of communication were
How early civilizations recorded
A knowledge of the land of Egypt, Assyria, Babylonia, and Phœnicia, and what they contributed to civilization
The story of how the alphabet came about
A knowledge of the books of the Middle Ages
How the world began to read

A knowledge of the life of the Middle Ages and just what part the monks took and why
The story of paper-making
Paper-making as an industry
The history of printing and its spread westward
Differences between early methods of printing and modern methods
  How to make type
  How to print
  How to set type
  How to make hectograph material
  How to make a chalk plate
  How to make a stereotype
  How to show a two-color process
A knowledge of how to care for books
How to make a handmade book
How books were made by the monks
A knowledge of how to use a library well
How our religion came about. (This grew out of discussing the beliefs of the Egyptians)
The history of the library
A knowledge of time (B.C. and A.D.)
How to make a time chart
How to make graphs
Acquaintance with specific terms, such as cuneiform, hieroglyphic, cairns, lectern, etc

### *E. Analysis into Different Phases of the Work*

(Subject-matter content growing out of the unit)

*English* (composition, literature, reading, spelling)
  Correcting misspellings in all written work
  Making contributions to the magazine
  Preparing written material on specific problems; examples:
    What are tally sticks?
    Who invented printing?
    Who was Gutenberg?

    - How was paper made?
    - What does a paper mill look like?
    - Which was the first civilized nation?

*Writing letters*

- Making arrangements for a trip to a paper mill
- Making arrangements to visit the Bronx Botanical Gardens
- Making arrangements to have samples of handmade paper sent to the class by a paper company
- Writing original poems on different phases of the work
- Writing labels for illustrative material for the bulletin board
- Making oral reports
- Making bibliographies of findings
- Using the library more intelligently
- Making a play

*Reading*

- Looking up reference material pertaining to topics and problems under discussion
- Handling more than sixty-five books in finding answers to specific problems
- Reading legends of early civilizations
  - The Magic Crocodile
  - When Isis sought her Lord
  - The Tale of Two Brothers
  - (Stories of the gods and their relation to the life of these early civilizations)
  - Parts of the Book of the Dead
  - The Story of Tsai Lun, or The Spirit of Paper-Making

*Geography*

- Geographic influences of the Nile
  - How the Nile valley contributed to civilization
  - Why the Nile overflows
    - Influence of the wind belts
    - Influence of mountainous regions in supplying water
    - What is a delta? What is sediment?
- How geography contributed to the civilization of Mesopotamia

- What effect the Mediterranean had upon these early civilizations
- Why the Phœnicians were called the traders
- How the alphabet followed trade
- Map study showing the spread of the paper industry and the spread of the invention of printing
- Why papyrus instead of wood pulp was used by the Egyptians as material for paper
- Growth of the paper mill
  - Number in United States
  - Location — relation to forests
  - Forest conservation
  - Would the location of a paper mill of 1870 or before have depended on the forest?

*History*

- The history of recording (from primitive man down to modern times):
  - What were the primitive methods used?
  - How did early civilizations record?
    - In the land of Egypt
    - In the land of Mesopotamia
    - In the land of China
  - What do we owe to Phœnicia?
  - What is the significance of the Rosetta stone and of the Behistun rock to the history of recording?
  - What is the history of paper-making?
  - What is the history of the invention of printing?
  - What has been the evolution of the book?
  - What is the history of the library?
  - What has been the effect of modern inventions on modern methods of recording?

These topics overlap. The work was not taken up from the standpoint of history; so it was not chronological. It simply illustrates the kinds of things which were discussed and which might come under the head of history if one were teaching it from that point of view.

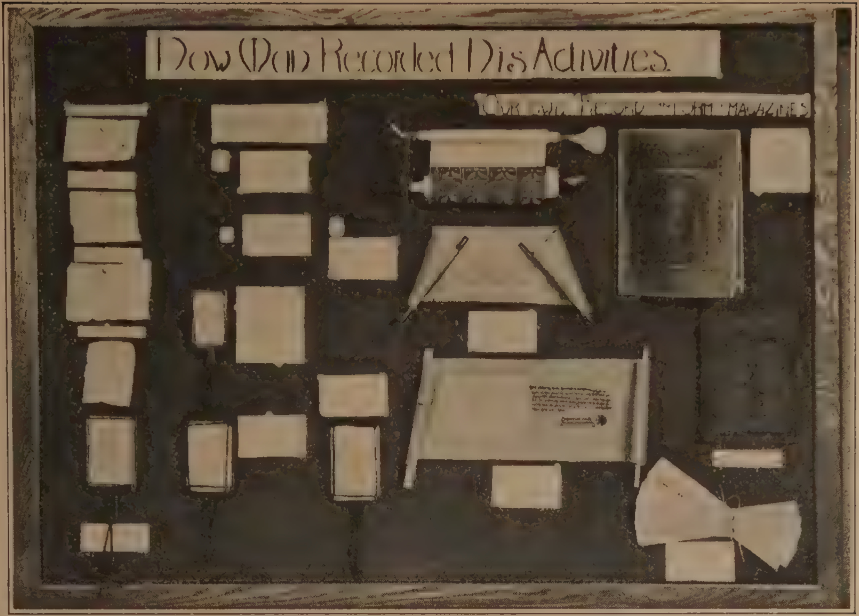
There was a time line in the classroom. Whenever the class found a date in connection with their problem they placed it on the line, and in this way they got the conception of the sequence of events and of how long it took man to record in the form he does today.

*Arithmetic*

Compiling statistics on the printing industry
Compiling statistics on the paper industry
Making graphs using the above figures
Calculating the cost of our magazine
Calculating the cost of making a book

*Fine Arts*

Designing covers for the *Papyrus Monthly*
Designing pages for the hour book. (A trip was taken to the Metropolitan Museum to see a real hour book in order to get suggestions)
Designing the cover for the hour book
Drawing characters for the play in order to plan their costumes
Drawing designs to put on the lectern. (A trip was taken to the Metropolitan Museum to study medieval architecture)
Making studies of the artistic excellence of a book. (A trip was taken to Columbia University to see an exhibit of beautifully bound books)
Making designs for our own printer's symbols to be used in our hand-sewn books
Designing the cover for the program of the play of "Gabriel and the Hour Book"
Studying the making of an etching. (A trip was taken to Teachers College to see a demonstration of how an etching is made)
Designing end sheet for hand-sewn books
Drawing sketches to go in hand-sewn books
Discussing page arrangements of the magazine
Discussing cartoons. (Desirable ones; those that were not desirable, and why)



DIFFERENT KINDS OF EARLY RECORDS

These articles were made by the sixth-grade pupils in connection with their unit of work

*Industrial arts*

- Discussing types of early books. (Their form, their purpose, kinds of record to put on them)
- Making different kinds of early records
  - Knotted cords (a string calendar), tally sticks, wooden book, lead book, wax tablets (experimented with different kinds of wax); made parchment, clay tablets, palm-leaf book, scrolls, hornbook
- Making hectograph material for the printing of a magazine
- Making paper
  - Discussing handmade processes and mechanical processes
  - Making paper from the papyrus plant. (A trip was taken to the Bronx Botanical Gardens to secure some of the plant in order to make it into paper and to see the plant)
  - Discussing how the Egyptians did it
  - Making paper of linen rags
    - Making deckles and molds; experimented with proportions; shredded linens; discussed the values of rag papers; bought some commercial pulp to try
  - Making paper from wood pulp. (A trip was taken to a paper mill. Secured pulp to try — some chemically treated; experimented with both types; used silk threads in some of the mixture to see results)
  - Discussing paper-mill workers. (Salaries, number of hours, skill in performing job)
- Discussing allied businesses. (Big corporations' owning of forests, coal mines, paper mills, newspapers, etc.)

*Printing*

- Casting type
- Setting type. (For programs, title pages of book, material to go in book)
- Making chalk-plate prints
- Using two-color process. (Cover of Christmas number of magazine)
- Discussing hand setting of type and modern methods. (A trip to a printing plant to see modern method)

Making a hand-sewn book. (Making signatures, arranging signatures for sewing, sewing signatures, making cover, gluing the book)

Discussing hand-sewn books and those made by machine. (A trip to a printing plant to see a book made by machine)

*Science*

How the wasp taught us to make paper

The story of the making of ink

Materials used in making paste and glues

Lumber in the making

It is difficult to list the science, because there are phases of scientific subject matter in the work in geography and in the industrial arts.

### *F. Subject Matter Other than that contributed by the Unit*

Drill material in reading, arithmetic and spelling. (For certain pupils who are below the grade norm)

*Arithmetic*

Actual needs in the school. (Paying bills for lunches, supplies, club activities; using the school bank for this purpose)

- Running the "Paying of Bills Department"
- Making graphs of results to show how much money was actually handled

Arithmetic from textbook. (Review of fractions, decimals, simple per cent, denominate numbers, area, and volume — simple problems)

*Reading*

Individual-pupil reading list

*Literature* (each pupil owned two books of poetry, one of modern poetry and another of ballads)

These poems were read together to get a feeling for standard poetry and ballads

### *Bibliography on the History of Records*

(Selected by the pupils)

These books were selected from sixty-five books used by the pupils. The selection was based on those which were most helpful.

ADAMS, JOSEPH H. Harper's Indoor Books for Boys. Harper & Brothers.
ARNOLD, EMMA J. Stories of Ancient Peoples. American Book Company.
BAIKIE, JAMES. Ancient Assyria (Peeps at Many Lands Series). The Macmillan Company.
BAIKIE, JAMES. Ancient Egypt (Peeps at Many Lands Series). The Macmillan Company.
BEARD, C. A., and BAGLEY, W. C. Our Old World Background. The Macmillan Company.
BULFINCH, THOMAS. Age of Fable. David McKay Company.
BUTLER, F. O. Story of Paper-Making. J. W. Butler Paper Co.
BRADLEY, JOHN W. Illuminated Manuscripts. Messrs. Methuen and Company.
BREASTED, JAMES H. Ancient Times, A History of the Early World. Ginn and Company.
CARTER, THOMAS F. The Invention of Printing in China and its Spread Westward. Columbia University Press.
CLODD, EDWARD. Story of Primitive Man. D. Appleton and Company.
CLODD, Edward. The Story of the Alphabet. D. Appleton and Company.
EGE, OTTO F. The Story of the Alphabet. Munder.
EGE, OTTO F. Pre-alphabet Days. Munder.
FAY, L., and EATON, A. Use of Books and Libraries. F. W. Faxon Co.
GOSSE, A. BOTHWELL. Civilization of the Ancient Egyptians. Frederick A. Stokes Company.
GRESS, E. G. American Handbook of Printing. Oswald.
HILLYER, V. M. A Child's History of the World. The Century Co.
HODGDON, JEANNETTE R. The Enchanted Past. Ginn and Company.
HOLLAND, RUPERT S. Historic Inventions. George W. Jacobs & Co.
MADAN, FALCONER. Books in Manuscript. Kegan, Paul, Trench, Trubner & Co.
MADDOX, H. A. Paper. Isaac Pitman & Sons.
MORRISON, STANLEY, and JACKSON, HOLBROOK. A Brief Survey of Printing History and Practice. Alfred A. Knopf.
MILLS, DOROTHY. The Book of the Ancient World: G. P. Putnam's Sons.

RAGOZIN, ZENAIDE A. History of the World; Early Egypt. Harison.
RAWLINGS, GERTRUDE B. The Story of Books. D. Appleton and Company.
STEIN, EVALEEN. Gabriel and the Hour Book. The Page Company.
STUART, DOROTHY M. Boy Through the Ages. George G. Harrap & Company.
VAN LOON, HENDRIK. Ancient Man. Boni & Liveright.
VAN LOON, HENDRIK. The Story of Mankind. Boni & Liveright.
WELLS, MARGARET E. How the Present Came from the Past. The Macmillan Company.
WINSLOW, LEON L. Elementary Industrial Arts. The Macmillan Company.
WINSHIP, GEORGE P. Gutenberg to Plantin. Harvard University Press.

## *SIXTH GRADE*

### HOW MAN HAS TOLD AND RECORDED TIME

The ability to use geographic facts and principles in interpreting day-by-day occurrences, the ability to enjoy and use scientific knowledge in understanding the environment, not only meets a present need in child life but should result in a richer adulthood for him. The unit of work "How Man has Told and Recorded Time," besides providing much work in science that bears a practical relation to the affairs of everyday life, opens up another field for observation in elementary astronomy. It is another approach to an understanding of the meaning of progress, a survey of our historic background. It encourages the habit of watching the papers and magazines for new developments and of weighing the sources of evidence before drawing conclusions.

This unit is so rich in intellectual content that it makes an appeal to children of the sixth grade and gives them an opportunity to interpret and use principles within their grasp in the various sciences that are oftentimes not made possible for them until later years.

Friends in California at their luncheon tables may listen to our afternoon baseball scores while others in London are broadcasting for us their evening concerts. In these days of almost instant communication between various portions of the earth, difference in time is an essential factor, and many situations will present themselves that may be utilized as a means of approach for a better understanding and a richer appreciation of man's progress in meeting the need for telling and recording time.

THE TWENTIETH CENTURY LIMITED

Illustrative painting by a sixth-grade boy. The theme was suggested by the Time unit

### *How it Came About*

On the Monday following the Sunday which marked the opening of the daylight-saving period one of the pupils was nearly an hour late because of the new adjustment. Deeply disturbed, she wanted to know who had the right to determine the correct time. This opened the discussion which involved a period each day at first and which developed from week to week into the unit that finally has been called "How Man has Told and Recorded Time."

The first discussions centered round the school timepieces, the timepieces in the homes, the city clocks, broadcasting the time at noon from Washington, D.C., the master clock in the Naval Observatory at Washington, reasons which led our people to adopt a plan to give them a longer daylight period in the afternoon, its advantages and disadvantages, and objections of people who have a longer period of daylight in summer. From these discussions the following questions were asked:

How is the master clock regulated?

When we went to Europe this summer we set our clocks ahead almost every day. We put them back coming home. Where did the ship's officers get the time on the ocean?

Do we have more daylight when the earth is nearest the sun?

What causes the midnight sun?

How long is the longest day in New York? the longest night?

How did primitive people tell time?

In answering the first question, it was found that watches indeed "told tales on the universe." A keen interest in the universe immediately became manifest. Important observatories in our own country and in other countries were located. Several children had visited the

Jungfraujoch in Switzerland; others had visited or knew about Yerkes, Mt. Wilson, Lowell, and Maria Mitchell in our own country. Telescopes, the story of the first telescope, the hundred-inch telescope at Mt. Wilson, and Galileo and his contributions were discussed.

To answer the next four questions, sphericity, rotation, revolution, and their results were studied. An orbit traced on the floor, a small globe, and a flashlight were the materials used to make clear the third and fourth questions. Daily observations in our own sky were encouraged and regularly reported. Most of the observations necessarily had to be made outside of school. They began on the roof of the school with smoked glasses, old kodak films, and compasses. In order to express themselves clearly the pupils found it necessary to know terms such as "celestial sphere," "zenith," "horizon," "altitude," "declination," "degrees." During the fall they watched the sun's path across the sky, noting its distance south of east and south of west at sunrise and sunset, its lowness in the southern sky at noon, and the effect of the slanting rays. This was connected in the classroom with the earth's position in the orbit and the circle of illumination. The class noted that their room on the north side of the building was receiving no sunlight.

Next to the sun the moon has been most important as a measurer of time. Keen interest was expressed in the night sky, the moon's behavior, the shifting of the position of the stars. Constellations and stars already known were charted in the classroom. With the direct aid of *The Monthly Evening Sky Map*, a monthly publication from the library, and the monthly chart on the door of the astronomical room at the Museum of Natural History, the class knew what was happening in the night sky — when and where to begin the quest each evening.

The boys were keenly interested in using their compasses. Directions were determined from the position of the sun, east being the direction toward which the earth turns. The classroom was oriented to the points of the compass. Terrestrial magnetism and the location of the magnetic poles were discussed. How to determine direction at night, the North Star, and sidereal time followed.

The satisfactory conditions for the observation of Mars during October and November of this year occasioned the publication of numerous articles in the daily papers concerning the investigations and studies that were being made in our own country and in foreign countries as well as articles of a speculative and sensational nature. The classroom bulletin board could not accommodate all the material voluntarily brought in by the pupils. Various plans for preserving it for reference were considered. The one deemed most practical was to mount and file the most scientific articles. Theories and facts were defined; conservative statements based on much previous thought were contrasted with the sensational articles. The pupils had real practice in weighing evidence and in attempting to find the facts.

A list of questions that arose from day to day in connection with the observations was kept. Some had to be rejected because of the limits of our present knowledge of natural phenomena; others because the facts were not within the grasp of the pupils. Many involved useful and meaningful science, and answering them stimulated the work of the class.

Following are some of the questions, the answers to which involved many periods of instruction in geography and the allied sciences and out of which grew much work in literature and history:

If there are people on Mars, would they look up at the earth?
What is atmosphere? How many miles away does it end?
When you go up higher, why does it get colder?
What causes wind?
What are clouds made of? Why are some clouds white and feathery and others black and lumpy?
How did the planets and stars get their names?
How do we know what they did thousands of years ago?

Imagination has always been stirred by natural causes, and our observations resulted in many beautiful and creative expressions. Some of the poems written in school and at home are given below:

### NIGHT

Silently, softly, the stars drift by,
The moon is slowly rising,
Like a streak of gold a star drops to the horizon,
A cloud floats by the moon,
From the still waters is heard the cry of a loon;
All is still. Night is here.

### SNOWFLAKES

The snow is coming down so fast
  It piles itself upon the grass;
The cold North Wind does briskly blow,
  And round and round the snowflakes go;
They light upon the shrubs and trees
  And even on the distant seas.

### SPRING

When the spring returns
And old winter adjourns;
When the farmer has started his garden to grow
And planted his seeds in a neat little row;

When the leaves come on the trees,
And then flowers, and bees,
Spring smiles at old Winter and makes him a bow,
And says, "I'm ruling the Earth just now."

### MARS

Of late the papers have been full of this planet Mars.
They say it is of ruddy color, up among the stars;
Some think that life is living there or something of the kind.
Oh dear, I never can remember, I've such a flighty mind.

Astronomers just peer and peer and peer for nights and days,
They never even go to bed or eat — they've such queer ways.
They make their observations with a great big telescope;
I guess that when I am a man I'll climb to Mars by rope.

I wonder if the other planets are red-headed, too,
And if I went to the earth's center if I'd fall through.
But still though people want a trip the Martians for to see,
I'd just as soon stay home; the earth is good enough for me.

Parallel with the science work was the search to find an answer to the question How did early people tell time? The class began with the Mesopotamian region, whence we get our first notions of astronomy and our first timepieces, and traced the development of human progress through Egypt, Greece, Rome, and western Europe. It was interesting to find that the Chinese, the Aztecs of Mexico, and the Incas of Peru had made many similar discoveries in astronomy. Always when possible and feasible the physical aspects of the regions were considered for an explanation of human activities. The class found out that the clear skies of the Mesopotamian region were conducive to the studies that were made in astronomy, and that myths and lore of the various peoples, their explanations of physical phenomena, stimulated a more scientific interpretation. Newspaper and magazine articles provided much information pertaining to all the work. The need for a means of preserving and sharing observations, reports, and other experiences resulted in the publication of a grade magazine. It was called *The Gnomon* because of the meaning of the word, "one who knows," and because it is the name of the indicator on the sundial.

### *Special Activities*

Briefly, these were the special activities accompanying the development of the unit:

1. Using compasses.
2. Using telescopes and tracing their history.
3. Making pendulums and studying the principle.
4. Finding and printing sundial mottoes; making original mottoes.
5. Making monthly charts for school bulletin board; stating most conspicuous objects in the sky.
6. Making a stamp chart with modern stamps of ancient countries.
7. Making a zodiac calendar.
8. Making a list of things we use bearing Greek and Roman names; for example, Vulcan furnaces, Ajax tires, Venus pencils, etc.
9. Painting a frieze for the classroom showing progress in timekeeping.
10. Painting pictures of sun gods and constellations.
11. Inventing and making time instruments, using principles of early time-recorders: shadow sticks, sundials, clepsydras, sandglasses, time candles.
12. Keeping a record of class activities in a grade magazine.
13. Making and using a hectograph.
14. Writing and dramatizing a play, "The First Water Clock."
15. Making a time line of history.

INVENTING AND MAKING TIME INSTRUMENTS

Pupils of the sixth grade are here shown at work in the industrial-arts shop. They are making time instruments

### *Trips*

These trips were possible because of the richness in the school environment:

1. Metropolitan Museum of Art
    Timepiece collections
2. American Museum of Natural History
    Meteorite collection, zodiac floor design, eclipse pictures, the painting "The Earth as seen from the Moon"
3. United States Weather Bureau
    Anemometer, rain gauges, sunshine recorder, barometer, the making of weather maps
4. College of the City of New York
    Old astronomical books, telescopes, sidereal clock
    (Observations were made of Jupiter,— four moons were visible,— of our moon, of Mars, of the Pleiades, and of the North Star)
5. Columbia University Library
    Zodiac floor design
6. South Field, Columbia
    Engineers' sundial
7. Barnard College
    Garden sundial
8. Homes of children to see curious clocks

### *Analysis of the Unit in Terms of Subjects of Study*

#### *Spelling*

Words needed for oral and written expression were listed by the teacher. At the end of various periods (usually a week) inventory lists were dictated and special spelling-drill periods were devoted by the children to learning the words they did not know. Other periods were spent in dictionary study of new words, their derivation and structure. The writer was held responsible for his best work before handing it to the editorial committee of the magazine.

*Composition*

Finding and reproducing star legends and sun myths of the various peoples furnished an abundance of work in oral and written composition and stimulated the writing of original myths.

Adventures in the universe seemed to appeal to every child, and many periods were spent writing, reading, and enjoying original stories. The following titles suggest the content: "My Adventures in Star-Catching, or Making a Stellarium," "Professor Zo Diac and Me," "The Heavenly Twins," "My Trip through Space," "Impy on the Moon."

The trips furnished many opportunities for letter writing and for recording experiences. Letters were written to Dr. Jacoby for information regarding the engineers' sundial; to Dr. Branin for permission to visit the Columbia Observatory; to Dr. Klapper and Mr. Wolf in appreciation of their help at the City College.

Many problems concerning the publication of the grade magazine arose. Standards for its publication were set up by the children. It was the stimulus for the major part of the work in composition, spelling, and writing.

Experiences in our own country and in foreign countries were shared with the group through travel talks, illustrated by the lantern and post cards. One period a week was set aside for this work. Many of the experiences bore a pertinent relation to the general unit.

*Reading*

Reference material pertaining to the general topic provided training in the efficient use of books, indexes, and statistical tables.

Newspaper and magazine articles also provided a fund of information. A keen interest in present-day affairs was stimulated through their use.

Recent archæological discoveries, investigations pertaining to the various planets, stars, and nebulæ, reports of comets, eclipses, sun-spot activity, and air navigation were among the reading interests. Some of the magazines that the majority of the children knew and used were these: *St. Nicholas*, *Popular Science*, *Popular Mechanics*, *Nature Magazine*, *The National*

*Geographic Magazine, Natural History, The Literary Digest, The Illustrated London News, Asia, The Junior Red Cross Magazine, The Monthly Evening Sky Map.*

*Fine arts*

1. Paintings of sundial inscriptions
   Lettering and spacing
2. Frieze on history of time-telling
   Arrangement of dark and light masses, harmonious color, subordination in pictorial composition, drawing of figures
3. Sundial designs
   Principles of design, rhythm, subordination; arrangement of three values
4. Magazine covers
   Principles of design used in making book or magazine cover; use of linoleum and printing outfits; two-color process
5. Calendar — zodiac
   Filling given space with zodiac sign selected — using principles of rhythm and subordination; obtaining interesting lines by means of the gauge
6. Frieze of constellations
   Appreciation of mural painting; practice in arrangement of line, mass, and color; use of oil paints

*History*

The growth of ideas, their passing from mind to mind, discoveries made and records lost, rediscoveries, and the paralleling of similar achievements are points that were emphasized in the history work.

Speculation as to the way early man used shadows, stones, and cliffs to mark the time for daily and future events only.

First records of sundials; the Bible as history; Babylonian shepherds as astronomers; worship of sun, moon, and stars; the story of Abraham; the religion of the Jews contrasted with that of the Babylonians.

Early proficiency of the Egyptians in all mathematical sci-

ZODIAC CALENDAR

Linoleum blocks were designed and cut by the pupils. The calendar was printed and copies were sold

ences; their records of the rising and setting of the stars; engraving these records on their monuments; the obelisks as gnomons (a trip to Central Park to see an Egyptian obelisk); the Egyptian shadow stick; the Egyptian calendar.

Greek mythology: Helios, the sun god; Apollo, the god of light; Artemis, the goddess of the moon.

Herodotus, the father of history; Homer, the great poet; the Iliad and the Odyssey.

The clepsydra, or water clock, improved by the Greeks; the sandglass carried by the Athenians; "the hemicycle of Berosus," a favorite form of time-recorder in Greece and Rome.

The preservation of Greek culture; story of Archimedes; the clepsydra in Roman law courts; Julius Cæsar; correction of the calendar; introduction of leap year; meaning of the names of our months; the Julian calendar.

The Christian Era: the birth of Christ; the Wise Men follow the star; meaning of A.D.

The spread of Christianity; bells in the cathedrals and monasteries; meaning of the word "clock"; types of early clocks; clock of the Strasbourg Cathedral; Galileo's principle of the pendulum; the first pendulum clocks; "the Nuremberg egg"; the Gregorian calendar.

Grandfather clocks in the seventeenth and eighteenth centuries; early American clocks and watches; Eli Terry; Seth Thomas.

Story of the first water clock; writing and dramatizing a play to tell this story; study of early Chinese life essential for writing the play. (See page 21.)

The Aztecs of Mexico.

The Incas of Peru.

Use of the lunar calendar by the Japanese and the Chinese until recent times.

*Science*

*The atmosphere.* Water vapor; the formation of clouds, an acquaintance with cloud forms and their names, observing the motion of clouds; the formation of rain, measuring rainfall, making rain gauges; sleet; hail; snow; dew and frost; fog and mist; pressure and its measurement.

*The universe.* The solar system, the sun our source of heat and light; the moon and its phases, lunar calendars; the planets and their satellites; asteroids, meteorites, comets; the zodiac;

an acquaintance with some of the commonly known stars and constellations — the North Star, Ursa Major, Ursa Minor, Orion, the Pleiades, Cassiopeia, Betelgeuse, Rigel, Capella, Sirius, the Galaxy; sidereal time.

*Geography*

Common theories about the earth in ancient times and now.

Sphericity — finding proofs, utilizing pupils' experiences in foreign travel and at the seashore.

Effects of the shape of the earth.

Rotation of the earth.

Time of rotation, direction, proofs; rotation has given rise to our unit of time, the day; solar day, sidereal day, civil day.

Latitude and longitude; need for determining location, for reckoning distances; longitude and time, standard time belts of the United States, international date line.

Seasons: causes and effects.

Zones.

Winds: measuring wind velocity, strength of the wind; the trade winds, the doldrums, the westerly winds, monsoons, and similar winds.

Deflection of winds and ocean currents.

Tides.

Gravity.

The clock and watch-making industry in Europe and the United States. The study of England, France, and Switzerland.

*Household arts*

*Temperatures.* The effect of different temperatures on the same kind of recipe; use of pressure cooker, oven, and double boiler in the preparation of foods; long, slow cooking at a low temperature as compared with steam-pressure cooking at high temperatures for a short time; preparing baked beans and cooked cereals.

Making candy; comparing the temperature of boiling water and the temperature of boiling sugar sirup; noticing that as the water evaporates the sirup is more concentrated and the temperature of the boiling point is higher.

Making ice cream and ices for noon and afternoon lunches; lowering of temperature due to the use of salt and ice in the freezing mixture; use of salt on icy sidewalks.

*Crystallization.* Crystal formation in sugar cookery as a result of the concentration of the sirup due to the evaporation of water.

*Condensation.* Condensation of water vapor on cold surfaces (glasses of water, windowpanes); dew and distillation.

*Expansion.* The practical use of the expansion of water as it turns into steam as a leavening agent in the preparation of popovers; the reason for the safety valve in the use of the pressure cooker; other applications, such as the steam boiler.

*Textiles.* The making of costumes for a play resulted in the study of textile fibers, including chemical and physical tests and the uses for various fabrics.

Use of the sewing machine (a visit to a sewing-machine factory).

*Mathematics*

The mathematical experiences in this unit, such as those of latitude and longitude, of the use of the sextant, of finding latitude by the North Star, of placing hour lines on sundials, of finding the height of objects by measuring their shadows, and of estimating the sun's position above the horizon and south of the zenith involved the use of much geometry. Answering the question "Why is Mars nearer the earth some years than others?" required an explanation of ellipses, concentric circles, radius, and diameter.

Interest in Dr. Michelson's new figures on the velocity of light introduced a study of the light year. An acquaintance with the metric system and foreign money was made through reading articles describing astronomical apparatus, observatories, etc. in European countries.

The work in geometry included some discussion and practice on such topics as systems of measurement; length and area; perpendicular lines; area of rectangle and triangle; general notion of kinds of angles; general idea of circle and the measurement of angles; parts of the circle; length of the circumference; special triangles, as, isosceles and equilateral; kite figure and constructions; regular polygons; and some study of parallel lines.

*Physical education*

In the physical-education period several dances were worked out. One of these was built around the pupils' ideas of the revolution of the planets and their satellites in the solar system. Another was called The Spiral Nebula.

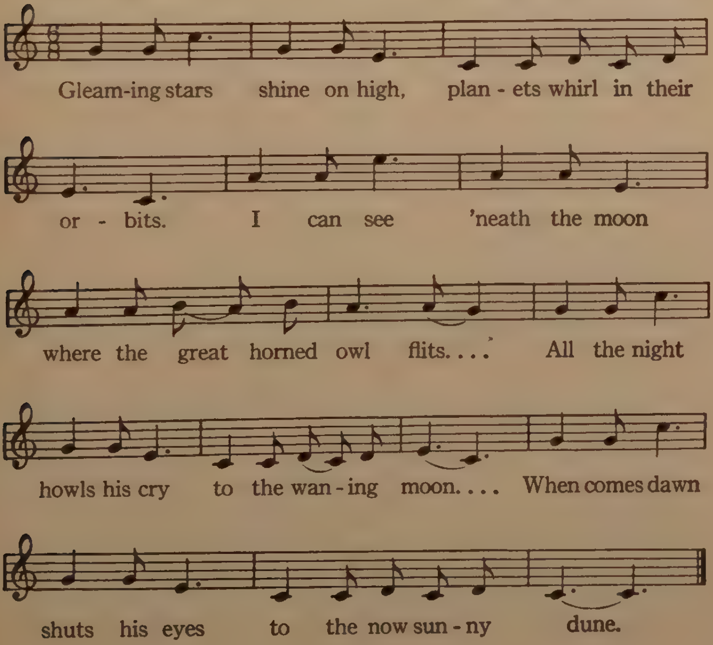
A Chinese dance for the dramatization of "The First Water Clock" was taught.

*Music*

Some interest in setting poems to music was manifested. Here is an original poem inspired by the unit and set to a melody by Beethoven, whose one hundred and fiftieth anniversary was being celebrated.

### A Song

Words by Joan N Melody by Beethoven


Gleam-ing stars shine on high, plan - ets whirl in their
or - bits. I can see 'neath the moon
where the great horned owl flits. . . . All the night
howls his cry to the wan - ing moon. . . . When comes dawn
shuts his eyes to the now sun - ny dune.

*The industrial arts*

- Learning about and constructing time records used during various periods of history
- Making various types of
  - Shadow sticks
  - Water clocks
    - Bowl
    - Clepsydra
  - Sundials
    - Spherical
    - Horizontal
      - Cast in concrete
      - Made of wood
      - Made of metal
    - Hemicycle of Berosus
  - Hourglass
  - Time candles
- Explaining principles involved in constructing these
  - What causes wood to warp and how to prevent it
  - The effect of water pressure in recording time with water clocks
  - How glass is made — glass-blowing
  - The relation of latitude to the angle of the gnomon of the sundial
  - Planning sundials by the mathematical formula
- Learning how our clock evolved from these instruments
  - The principle of the pendulum as interpreted by Galileo
- Learning about telling time by the stars
- Seeing the star clock at the astronomical laboratory of New York University

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COLLINS, A. FREDERICK. The Book of Stars. D. Appleton and Company.

Earle, Alice M. Sundials and Roses of Yesterday. The Macmillan Company.

Guerber, H. A. The Story of our Civilization. Henry Holt and Company.

Kinney, Muriel. Stars and their Stories. D. Appleton and Company.

Kummer, F. A. The First Days of Knowledge. George H. Doran Company.

Olcott, William T. The Book of Stars for Young People. G. P. Putnam's Sons.

Olcott, William T. Sun Lore of All Ages. G. P. Putnam's Sons.

Earth and its Weather, *Rural School Leaflets*, Vol. XV, No. 3 (January, 1922). Cornell University.

Many helpful articles may be found in the Reader's Guide under Astronomy, Clocks, Calendars, Time, and Watches.

## Summary of Work for One Year

Supplementary to these detailed descriptions of units a summary of the work of all classes in the elementary division of the school is given for the year 1925–1926. The grades, except the fourth, were composed of two classes each.

The grades were divided into mature and less mature groups or classes. One factor alone in the pupil's qualities did not determine the class to which he belonged. All the qualities or factors represented in his development were used in making his classification. These factors were chronological age, mental age, educational age, social age as determined by teachers' judgments, and physiological age. New pupils were generally placed with the less mature group at first, and final placement determined only when significant facts about the pupil were known. The placement was always taken care of as soon as possible after the beginning of the year. This same plan for grouping children is regularly followed at the school.

Table I. Enrollment by Grades for the Year 1925–1926 and Average (Median) Ages. Mental Ages are based upon the Stanford Revision of the Binet Intelligence Tests, and Educational Ages upon the Stanford Achievement Tests. Achievement for May, 1926

| Grade | Number of Different Class Groups | Number of Pupils | Average (Median) Chronological Age | Average (Median) Mental Age | Average (Median) Reading Age | Average (Median) Arithmetic Reasoning Age | Average (Median) Arithmetic Computation Age | Average (Median) Spelling Age |
|---|---|---|---|---|---|---|---|---|
| I . . . . | 2 | 30 | 6–5.6 | 7–8 | | | | |
| II . . . . | 2 | 41 | 7–8 | 9–2 | 8–5 | 8–7 | 7–10 | 8–5 |
| III . . . . | 2 | 41 | 8–9 | 10–2 | 10–1 | 9–5 | 9–5 | 9–2 |
| IV . . . . | 1 | 30 | 9–6.5 | 11–4 | 12–9 | 11–4 | 10–11 | 11–3 |
| V . . . . | 2 | 37 | 10–9 | 12–11 | 14–8 | 12–9 | 11–9 | 11–8 |
| VI . . . . | 2 | 52 | 11–11 | 14–3 | 15–11 | 14–11 | 14–6 | 13–0 |

The average (median) chronological age, the average mental age, and the average educational age in reading, in arithmetic reasoning, in arithmetic computation, and in spelling are given in Table I for each grade for the year 1925–1926. Table II gives similar information for the year 1926–1927.

The work of the classes has been summarized under the headings "Activities carried on during the Year," "Trips or Excursions Taken," and "Work in the Subjects of Study." The very nature of this record makes it impossible as well as undesirable to give many details about the units or to tell all the work in the subjects of study. The detailed descriptions of illustrative units have been given for each grade. Had space permitted the description of

TABLE II. ENROLLMENT BY GRADES FOR THE YEAR 1926–1927 AND AVERAGE (MEDIAN) AGES. MENTAL AGES ARE BASED UPON THE STANFORD REVISION OF THE BINET INTELLIGENCE TESTS, AND EDUCATIONAL AGES UPON THE STANFORD ACHIEVEMENT TESTS. ACHIEVEMENT FOR MAY, 1927

| GRADE | NUMBER OF DIFFERENT CLASS GROUPS | NUMBER OF PUPILS | AVERAGE (MEDIAN) CHRONOLOGICAL AGE | AVERAGE (MEDIAN) MENTAL AGE | AVERAGE (MEDIAN) READING AGE | AVERAGE (MEDIAN) ARITHMETIC REASONING AGE | AVERAGE (MEDIAN) ARITHMETIC COMPUTATION AGE | AVERAGE (MEDIAN) SPELLING AGE |
|---|---|---|---|---|---|---|---|---|
| I . . . . | 2 | 33 | 6–7 | 7–10 | | | | |
| II . . . . | 2 | 34 | 7–5 | 8–11 | 8–0 | 8–4 | 7–10 | 7–10 |
| III . . . . | 2 | 39 | 8–8 | 10–2 | 9–11 | 8–10 | 9–3 | 9–7 |
| IV . . . . | 2 | 48 | 9–9 | 11–6 | 12–0 | 11–0 | 10–3 | 10–9 |
| V . . . . | 2 | 35 | 10–8 | 13–4 | 14–2 | 12–5 | 11–8 | 12–5 |
| VI . . . . | 2 | 35 | 11–9 | 14–2 | Adult | 14–4 | 14–2 | 12–11 |

other units, it would be seen that these partake in a large measure of the same characteristics. These summaries have been included for the benefit of those who wish a bird's-eye view of the whole elementary-school curriculum for one year. If one class for each grade is followed through the record, it will be seen just what kind of course of study the school has developed. It may appear meager, but that is due to the fact that we are attempting here to show the range of work rather than the quantity of it.

Naturally there is repetition of much that has been given under the detailed descriptions of units, because the units which have been found most satisfactory recur year after year. Many of the smaller units of work have not been included.

Suppose, for example, a reader wishes to know what work in arithmetic a pupil would have during the six years. He should read the arithmetic entries on pages 241, 244, 247, 251, 253, and 256. In the same way he may, if he wishes, examine reading or any other subject of study. Either class in any grade could have been used by the reader, since the work in each class in the grade is practically equivalent in minimum requirements. Classes $I^1$, $II^1$, etc. are the less mature groups in the grade.

## *FIRST GRADE*

### CLASS $I^1$

Average (median) chronological age, 6–3.5
Average (median) mental age, 7–2
Number of pupils, 14

*Units of work undertaken during the year*

Farm animals
Farm buildings
Food on the farms

Making farm animals of clay. Making shelters for farm animals. Making farm tools. Making dolls to live on the farm. Making trees. Cooking fruits and vegetables. Planning the farm. Making booklets of stories, songs, and trip records. Making dishes and cooking utensils. Making aprons for each pupil. Making plays: (1) "Corn Play," (2) "Christmas Eve on the Farm"

*Trips and excursions*

To a truck farm. To Central Park farm. To Central Park sheepfold. To railroads to see freight cars of apples. To stores in city where food goes

*Work in subjects of study*

*Reading.* Bulletins made up about common experiences. Reading the "Singing Farmer" in manuscript. Reading Bolenius Primer

*Writing.* Writing the names. Short letters to parents and absent children were written during the second term

*Number work.* Counting and writing numbers

*Science.* Cooking fruits and vegetables. Plant and animal life on the farm. Spring flowers. Trees. Birds seen in the park. Pictures and stories about birds, insects, and flowers

*Social studies.* Our own city. Maps made with blocks. Location of homes. Near-by country. Farms. Letters and reports from parents who went South or West. Experiences of group who spent summer abroad

*Drawing and painting.* Illustrating books. Designing covers for books. Free painting at easels. Designs for toy dishes and doll clothes. Clay modeling

*Music.* Learning twenty-five or more farm songs. Wrote the words of two songs and set them to music. Songs and rhythms for dramatic plays

## *FIRST GRADE*

### CLASS I[2]

Average (median) chronological age, 6–9
Average (median) mental age, 7–8.5
Number of pupils, 16

*Units of work undertaken during the year*

Community life, with emphasis on the food supply

How we get our food

How people live together

Building a village. Making houses, stores, theaters, markets, stations, docks, and schools. Making furniture, curtains, trucks, trains, wagons, bridges. Sewing dolls and doll clothes. Cooking fruits and vegetables

*Trips and excursions*

To the grocery store around the corner. Across 125th Street ferryboat. To a farm on Long Island. To the miniature farm in Central Park. To East River markets. To top of Seth Low roof. To a dairy farm on Long Island. Along

125th Street seeing milk-receiving stations and trucks. To the meat market. To a Grade A bottling plant. To a dry-goods store

*Work in subjects of study*

*Reading.* Bulletins and leaflets which contained information about the trips, the building of the village, and the cooking of fruits and vegetables. The reading of various primers and simple little stories; as, "Everyday Classics Primer" and "The Magic Boat"

*Writing.* Manuscript writing at board of names and words that rhyme. Practice in order to write Christmas, Valentine, or Easter greetings. Little time given to writing

*Number.* Measurement in cooking and shop work. Counting attendance by 1's and in small groups — 2's, 3's, 4's, 5's. Counting the lunch order and checking it, with some attention to combinations of small numbers and of adding numbers on to 10. Reading of numbers in primers and books. Writing numbers up to 20 in order to record lunch order. Writing larger numbers if there is occasion for it

*Science.* Following up questions about steam, friction, balance, and electricity. Keeping a weather record. Going on nature excursions. Keeping pets — hens and rabbits. Care of an aquarium. Germinating seeds

*Social studies.* Block scheme of trips. Following routes of trips on large picture map. Trips, especially for orientation, to roofs of high buildings and across ferries

*Fine arts.* Paints and crayons. Illustrating trips, experiences both within and without the school, and subjects under discussion. Designing book covers, pottery, and furniture for houses, clay modeling of dishes, candlesticks, bowls, and animals

*Cooking.* Cooking the fruits and vegetables studied and making things with milk and cream; as, butter, cottage cheese, ice cream, milk soups, custard, junket

*Music.* Singing simple songs related to interests of class. Composing simple airs for original verse. Rhythms

## *SECOND GRADE*

### Class II[1]

Average (median) chronological age, 7–6
Average (median) mental age, 8–9
Average (median) reading age, 8–9
Average (median) arithmetic computation age, 7–10
Average (median) arithmetic reasoning age, 8–7
Average (median) spelling age, 8–5
Number of pupils, 21

*Units of work undertaken during the year*

- Study of foods from farm to city
  - *Vegetable study.* Trips to farms and markets and stores. Cooking and conservation of fruits and vegetables. Value of vegetables
  - *Milk study.* The dairy farm and the cows. Inspection, registration, and pasteurization of milk. Value of milk as a food
- Construction of play farm and city
  - *Farm.* Cow barn, horse barn, chicken coop, sheepfold, dairy house, pigpen, fences, farm wagons, farmhouses, and furniture
  - *City.* Apartment houses, stores, markets, pasteurization plant, wholesale houses, docks, bridges, trucks, railroads, post office, depot, church, and hospital
- Primitive life
  - Food, tools, clothing
- Map study
  - Tracing trips on wall map, laying out streets and tracing route of food from farm to city. Individual pictorial maps

*Trips and excursions*

To a farm on Long Island. To a market to see how food is brought in and distributed. To buy basket and chicken for Thanksgiving basket. To post office. To a dairy farm on Long Island. Along Morningside Drive to see the houses, the cathedral, and the trains. To a milk plant. To the roundhouses of a railroad. To Staten Island by ferry to see New York Harbor and the buildings of lower New York. To a firehouse

*Work in subjects of study*

*Reading.* Each pupil read seven books (First and Second Readers). News of school activities. News of class activities; as, milk study. Stories made up by class and individuals and printed on bulletins for class reading books

*Writing.* Letters for mailing in class box and to other grades. News for classroom paper. Stories of trips. Poems

*Number.* Measuring, counting materials, cost of materials, keeping of account books, paying for materials used. The need for number combinations. Some drill in the combinations

*Spelling.* Through letter writing, stories of trips, news for paper. Each pupil had a notebook where words most needed and asked for were listed alphabetically. Formal spelling lessons once a week during the second term, as drill was needed on certain words

*Science.* Pasteurization of milk. Discussion of elements in milk. Watch fat, water, and protein separate. Steam interest: change water to steam, force of steam, uses of steam. City sanitation

*Art.* Pictures of trips taken. Designs for house furnishings. Clay modeling of farm animals, fruits, vegetables, and dishes. Covers for recipe books. Covers for New York City scrapbooks. Painting of scenery on screens for New York City sky-line background

*Geography.* Interest in other countries. Simple maps

*Music.* Singing songs. Composing tunes for use in dramatic play. Rhythms

## *SECOND GRADE*

### CLASS II[2]

Average (median) chronological age, 7–11.5
Average (median) mental age, 9–5.5
Average (median) reading age, 7–11
Average (median) spelling age, 8–5
Average (median) arithmetic reasoning age, 8–7
Average (median) arithmetic computation age, 8–1
Number of pupils, 20

*Units of work undertaken during the year*

- Making a play city
- Transportation of people and goods in and about the city
- Watching and studying the building of modern city structures
- Observing and visiting various shopping or marketing centers
- Visiting buildings of public-service value such as post office
- Map study
- Food study and cooking
  - Cereals and the making of flour and corn meal. Fresh vegetables
- Making concrete and bricks
- Making a large boat
  - It was about eight feet long and on rollers so that children could get inside and ride. Many small trucks, automobiles, and trains were made

*Trips and excursions*

To New Jersey side to study trees, insects, etc. To see railroad, bridge, and river traffic. To buy Thanksgiving dinner. To neighborhood to study and sketch interesting buildings. To museum to see pictures and exhibits of New York City. To see builders' supplies, transportation and storage company. To see river front with docks and barges with builders' supplies being loaded and unloaded. To see the prehistoric animals and tools and relics of early man at the Natural History Museum. To the post office. To the Natural History Museum to see Pueblo Indian homes

*Work in subjects of study*

*Reading.* Easy books or stories related to the class activities (of these there are not many): "Red Feather," "Early Cave Man," "The Magic Boat." Stories made by pupils at the Lincoln School and at other schools. "Here and Now Primer." Bulletins and room notices. Stories read to pupils; "Here and Now Story Book," "Adventures in our Street." Library reading

*Writing.* Letters, stories, and poems. Practice manuscript handwriting for skill

*Number.* Measuring with ruler, yardstick, and tape. Measuring with cup — $\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{2}{3}$, $\frac{3}{4}$. Counting dimes, nickels, quarters, halves. Weighing pounds and half pounds. Telling time. Learning to add all combinations

*Social studies.* New York City: its railroads, docks, ferries, bridges, and rivers. The building of modern city structures: materials and workmanship. The business of the city: its markets and shops. Buildings of public necessity which serve the needs of the people. Map study: locating places visited and talked about (used small room maps and a large yard map)

*Music.* Songs and rhythms. Original tunes for original verses which were made to go with units of work

## *THIRD GRADE*

### CLASS III[1]

Average (median) chronological age, 8–6
Average (median) mental age, 9–6
Average (median) reading age, 9–10
Average (median) arithmetic computation age, 8–8
Average (median) arithmetic reasoning age, 8–7
Average (median) spelling age, 8–7
Number of pupils, 22

*Units of work undertaken during the year*

Study of Holland
Study of Switzerland

Study of the Indians of the Southwest

A textile study carried along with the Swiss and Indian study. Silk, cotton, and wool. Looms and weaving. Vegetable and commerical dyes prepared and tried in designs on textiles

Bayberry candles at Christmas. Silk handkerchiefs tied and dyed

Planning and filling a Thanksgiving basket

Caring for the aquarium

Compiling a room newspaper

*Trips and excursions*

To Metropolitan Museum to see pottery exhibit. To buy food for Thanksgiving basket. To see Dutch paintings. To Swiss shop to see products of Switzerland. To see Swiss hand carvings. To see paintings of the Far North. To Natural History Museum to see Indian weaving and spinning. To Natural History Museum to see Indian pottery and design

*Work in subjects of study*

*Reading.* Individual reading from library books. Group and individual instruction for less able readers. Teacher read to the class parts of "The Dutch Twins," "Hans Brinker," "Heidi," "Donkey John," and "Chi-Wee." Pupils found and read interesting stories to the class. Selections of poetry from "Silver Pennies," "This Singing World," and Walter de la Mare's books have been enjoyed

NOTE. This third grade did not read well and had to receive much instruction. They were the immature group of the third grade.

*Spelling.* Individual spelling lists. Horn-Ashbaugh second-grade list used during the second half of the year

*Arithmetic.* Lincoln School Practice Materials on Basic Facts. Figuring and paying monthly accounts. Figuring costs of individual lunches. Buying a Thanksgiving dinner and sharing the cost. Figuring cost of aquarium supplies. Counting money for Red Cross membership. Measuring wood for looms. Telling time

*Science.* Making a balanced aquarium. Siphoning water. Caring for chameleons. Watching tadpoles change. Finding out what water power is. Seeing a water wheel and steam engine work. Getting wax from bayberries. Getting colors for dyeing from vegetables. Setting colors with salt. Studying life history of silkworm. Unwinding silk cocoon to see chrysalis. Planting cotton seeds. Trying the effect of dye on cotton, silk, and wool

*History and geography.* Physical features of Holland, Switzerland, and southwestern United States, and how they have affected the habits of the people. Locating Holland, Switzerland, and the United States on maps and globes. Locating Egypt, Persia, China, and Peru. Tracing route of MacMillan Arctic Expedition. Drawing rough maps. Early history of New York. Stories of Columbus, Abraham Lincoln, and George Washington. Story of William Tell. The Indians of the Southwest before the coming of the white men and since

*Music.* Songs. Rhythms. Original verses and tunes. Playing on glasses and marimbas

### *THIRD GRADE*

#### CLASS III[2]

Average (median) chronological age, 9–0
Average (median) mental age, 10–4
Average (median) reading age, 10–10
Average (median) arithmetic computation age, 10–2
Average (median) arithmetic reasoning age, 10–6
Average (median) spelling age, 9–11
Number of pupils, 19

*Units of work undertaken during the year*

Study of Holland
Study of China
  Making a Chinese house
  A study of silk
Study of wool

Study of desert life
  The Bedouin home

*Trips and excursions*

To Metropolitan Museum to see work of Dutch painters. To Van Cortlandt Manor House. To a department store to see the historical exhibit. To Chinese room in Metropolitan Museum. To Metropolitan Museum to see Egyptian exhibits. To buy Thanksgiving supplies

*Work in subjects of study*

*Reading.* Stories about Holland: "The Dutch Twins," "Jan and Betje," "Sunbonnet Babies in Holland," "Marta in Holland," "Dutch Twins Primer." "The Rabbit Lantern," "Shen of the Sea," many reference books to find out about China. "Weavers and Other Workers," "The Four Wonders," "Geography for Beginners," "How We Are Clothed." "Human Geography," "How the Early Hebrews Lived and Learned." Much individual reading in the library

*Composition.* A play "Christmas in Holland." Writing accounts of activities for the class book. Writing explanations of exhibits. Writing letters to absent friends, to business firms asking for materials, to other classes inviting them to see the exhibits, and to those who helped. Each child reporting on some phase of the activity at an assembly program. Composing rhymes similar in some respects to the Chinese Mother Goose rhymes. Writing about desert life for the next year's third grade. Dramatic play in and about the Bedouin home

*Number.* Measuring for parts of house. Finding how long ago some events happened. Practice exercises in fundamental facts of addition and subtraction. Keeping an account of school expenses. Paying accounts

*Geography.* Finding how the people of Holland adjust themselves to conditions of environment; dikes, making cheese, fishing, bricks and pottery, and canals. Intensive agriculture in China. Where wool is produced in large quantities. How people live in a hot, dry country

*Science.* How locks on canals work. Experiments in preserving foods by canning, drying, and refrigeration. Experiments to show how clay beds are formed. The silkworm and its work

*Music.* Bells and bell towers of Holland. Singing Chinese folk songs, attending a Chinese operetta. Learning to sing "Little Lamb, Who Made Thee?" and "How Sweet is the Shepherd's Sweet Lot." Playing on glasses and marimbas

*Fine arts.* Dutch painters. Making tiles for Christmas gifts. Modeling grotesque figures. Designing and cutting linoleum blocks. Paintings for scenery and decoration of Chinese house. Designs for costumes. Designs for book covers. Painting pictures of sheep. Making a frieze for the room

*History.* Dutch influences in New York City. Reading "Rip Van Winkle." History of early New York. Seeing Peter Stuyvesant film. Inventions of the Chinese; tracing silk industry from China to other parts of the world. Great Wall of China. Marco Polo. Jews in Egypt. Ancient monuments, temples, and tombs in Egypt

## *FOURTH GRADE*

### CLASS IV

Average (median) chronological age, 9–6.5
Average (median) mental age, 11–4
Average (median) reading age, 12–9
Average (median) arithmetic computation age, 10–11
Average (median) arithmetic reasoning age, 11–4
Average (median) spelling age, 11–3
Number of pupils, 30

*Units of work undertaken during the year*

A food study — fruits and vegetables

A study of toys and toy-making

History plays. Reading "Following Columbus" and dramatizing four plays which were made from it by the class

A knight study — making and giving a play of knights

A study of poultry

*Trips and excursions*

To store to get supplies for the aquarium. To Metropolitan Museum to see primitive rattles and drums. To Metropolitan Museum to answer questions about armor and to see early Roman armor

*Work in subjects of study*

*Reading.* All members of the class read "Following Columbus," "Men of Iron," and "Rainbow Gold." Reference reading on fruits and vegetables, history, toys, and poultry. Reading a class book on toys and toy-making. Library reading. Special help for three members of the class who did not read well. Reading minutes, notices, clippings, and school magazines

*Spelling.* Fourth-grade Horn-Ashbaugh spelling list. Individual spelling lists for those who needed them — drill on special words such as *didn't, which, witch, whose, does.* Spelling words that have to do with school; as, *assembly, fourth, gymnasium, library*

*Handwriting.* Continuing the use of manuscript writing. Practice for speed. Learning to read cursive writing (all can)

*Arithmetic.* Keeping accounts. Individual practice materials, provided by the Lincoln School, used for drill in addition, subtraction, multiplication, and division. Long division. Introduction to the meaning and use of simple fractions

*Art.* Painting in connection with units of work. Chiefly water-color work. Filling spaces and making backgrounds. Making a book of imaginative paintings and poems

*Social studies.* Early discoverers and explorers. How the colonists lived. Knights and the Middle Ages. Chief production areas for fruits and vegetables and poultry in the United States and foreign countries. California: climate, rainfall. Toy-making centers: Germany, France, Japan, United States. The Mediterranean lands. Journeys of discoverers. Polar explorations. How to interpret maps and direction, international date line, equator, zones, latitude and longitude

*Science.* Work with the aquarium: setting it up; fish, crayfish, tadpoles, turtles, water boatman, dragon-fly nymphs, and plants. Making blue prints and a frame for the glass. Kinds of fruits and vegetables (bulbs, roots, seeds, tubers). Cold-pack method of canning. Evaporation and condensation. Development from egg to animal (frog and chicken). Experiments performed before the class by pupils: vibration of glass, lime in eggshells, water glass. Work with flowers and plants

*Music.* Singing. Making drums and rattles. Original rhythms. Study of drums and rattles. Begin the study of notation

## *FIFTH GRADE*

### CLASS V[1]

Average (median) chronological age, 10–9
Average (median) mental age, 12–10.5
Average (median) reading age, 14–0
Average (median) arithmetic computation age, 11–6
Average (median) arithmetic reasoning age, 12–9
Average (median) spelling age, 11–10
Number of pupils, 20

*Units of work undertaken during the year*

Water transportation — Making of reports about topics of special interest. Making boats. Drawings of boats for illustration of a book. Making a frieze for the room to show the evolution of boats

Fall exhibit of summer activities

Work with the room council

Keeping canaries and white rats

*Trips and excursions*

To Metropolitan Museum to study ships and maps. To South Ferry to see boats and ships. To Public Library to see books about ships. To Brooklyn to visit glass factory in connection with a study in Creative Music. To 125th Street ferry to see sailing ships. To Brooklyn Navy Yard to see dry docks and ships. To see steamer *Berengaria*

*Work in subjects of study*

*Reading.* Poems and stories of the sea. Writers of sea stories. Study of sea chanteys. Reading reference books for special information. Special library reading

*Spelling.* Horn-Ashbaugh fifth-grade list. Words needed in the Boat study

*Writing.* Either manuscript or cursive writing allowed. Practice in special cases to improve skill

*Composition.* Written and oral in connection with reports. Writing sea poems. Planning and giving an assembly program

*History.* General view of history from its beginnings until the present. History of the Egyptians, Phœnicians, Greeks, and Romans. Early explorers; as, Drake and Magellan. Early colonization of America. History of the development of the boat along with the history of discovery and exploration

*Geography.* World geography (world map, divisions of land and bodies of water, oceans and rivers). Place geography (specific locations). Physical geography (some study of the effect of wind and water and mountain barriers on countries). Latitude and longitude. Some effects of physical conditions on people and their ways

*Music.* Learning sea chanteys in connection with the unit. Singing them and other songs at assemblies and during regular music time. Creative Music (making and playing on marimbas)

*Science.* Floating bodies. Instruments used at sea

*Fine arts.* Pen-and-ink drawings of boats. Christmas cards. Linoleum blocks for book on boats. Frieze of boats for room

*Arithmetic.* Monthly bills and payments. Special drill in United States money which the lunch chart and change sheets called for. Drill on fundamental combinations in addition, subtraction, multiplication, and division. Use of drill material set up by Lincoln School. Some work with addition, subtraction, and multiplication of fractions. Used Thorndike Drill Books IV and V, Studebaker Work Books V and VI, and Schorling and Clark's "Practice Exercises"

## *FIFTH GRADE*

### CLASS V[2]

Average (median) chronological age, 10–9
Average (median) mental age, 12–10
Average (median) reading age, 15–4
Average (median) arithmetic computation age, 11–6
Average (median) arithmetic reasoning age, 12–7
Average (median) spelling age, 11–10
Number of pupils, 17

*Units of work undertaken during the year*

The Lincoln School Bank — Bank booth constructed. Equipment enlarged

The Lincoln Nature Corporation. A regularly organized corporation which went into business of breeding and selling. Canaries: cages made, nest provided, cared for. White rats: cages made, feeding experiment with young. Chickens hatched in incubator. Bulbs grown

Each child had many room duties for which he was responsible. There were many experiences calling for coöperation with the school, such as assemblies, council, bank meetings, and inter-class meetings. Room problems also demanded time and thought in their solution

Fall exhibit of summer activities

*Trips and excursions*

To Palisade Interstate Park for camp cooking and to study plants. To Van Cortlandt Park for the same. To visit a canary-breeder in Brooklyn. To Teachers College to see experiments in feeding white rats. To Van Cortlandt Park for field work

*Work in subjects of study*

*Reading.* Reference books in connection with the Nature Corporation. Individual library reading. School magazine, notices, bulletins, and clippings. Learning to use library

*Spelling.* Spell correctly in all written work. Using the dictionary. Horn-Ashbaugh fifth-grade list

*Writing.* Special attention given to those needing drill in the mechanics of writing. Good penmanship in all written work was stressed

*Arithmetic.* Monthly bills and payments. Special drill in the use of United States money which the lunch chart and change sheets called for. Drill on fundamental combinations in addition, subtraction, multiplication, and division. Use of drill material set up by the Lincoln School. Some work with addition, subtraction, and multiplication of fractions. Used Thorndike Drill Book IV, and Studebaker Arithmetic Work Book V

*Science.* Care and feeding of white rats. Controlled experiment in feeding. Balanced meals. Breeding canaries. Eggs hatched. Study of bulbs. Nature trips in spring

*Music.* Creative Music (making of marimbas). Making original tunes. Playing together on the marimbas. Singing songs

## *SIXTH GRADE*

### CLASS VI[1]

Average (median) chronological age, 11–11.5
Average (median) mental age, 13–2
Average (median) reading age, 15–9
Average (median) arithmetic computation age, 14–2
Average (median) arithmetic reasoning age, 14–4
Average (median) spelling age, 12–6
Number of pupils, 28

*Units of work undertaken during the year*

How Man has Told and Recorded Time: magazine published (*The Gnomon*), making sundial, clepsydra, shadow clock, time candles, hourglass

Famous bridges

Travel talks

Individual studies: recent scientific discoveries, history of violins, railroads, rhythms, life of Louis XIV, Panama Canal, Theodore Roosevelt, ancient man, India, castles, Australia, Lapland, France, fishes, dogs, snakes, ancient Rome, Scotland, racing motor boats

Work with the council

Fall exhibit of summer activities

*Trips and excursions*

To the weather bureau. To the Metropolitan Museum to see sundial and other timekeeping devices. To the Natural History Museum to see the film "United States of Brazil." To Bronx Park for nature study and for camp cooking

*Work in subjects of study*

*Reading.* Individual library reading. Reference work in connection with units of work. School magazines and notices.

*Spelling.* Horn-Ashbaugh sixth-grade list. Dictation. Words needed for the special unit

*Written English.* Material for the magazines

*Arithmetic.* Text: Myers's "Arithmetic Work Book," Grade VI; addition, subtraction, multiplication, and division of integers and fractions (drill). Simple per cent. Lincoln School Bank and lunch-record experiences. Denominate numbers. Angles

*Social studies*

*History.* General survey of history in the time unit. "The Making of America," by Vollintine

*Geography.* Results of the fact that we live on rotating and revolving sphere: weather and climate, rainfall, winds, atmosphere, ocean tides

*Science.* Out-of-door life. Fungi. Stars (star map). Star study. Water creatures (dragon-fly larva, caddis-fly larva, water scorpion). Black snails. Lizards. *Nature Magazine.* Caldwell and Meier's "Open Doors to Science"

*Music.* Singing and composing. Playing on ocarinas and flageolets. Playing on Chinese flutes in connection with the "Story of the Water Clock"

## *SIXTH GRADE*

### CLASS VI [2]

Average (median) chronological age, 11–9.5
Average (median) mental age, 14–11.5
Average (median) reading age, adult
Average (median) arithmetic computation age, 14–9
Average (median) arithmetic reasoning age, 16–9
Average (median) spelling age, 14–2
Number of pupils, 24

*Units of work undertaken during the year*

How Man Has Made Records. Making own record (*The Papyrus Monthly*, a magazine). Printing programs for a play. Making a book (wooden books, wax tablets, hornbook). Paper from the papyrus plant. Paper from rags. Linoleum blocks to show two-color process. Linoleum blocks for Christmas cards and magazine cover. Type. Chalk plate. Showing electrotyping. Printing covers for magazine. Marbling end sheets for books. Making a bibliography. Dramatizing "Gabriel and the Hour Book." Giving assembly on books (review of work of the year). Making an exhibit of the work of the year.

Work with the elementary-school council.

Fall exhibit of summer activities.

*Trips and excursions*

To see exhibit of German books and old manuscripts. To see papyrus plants growing. To visit Dr. Smith's library of rare mathematical books. To the Public Library at 42d Street. To see primitive records at the Natural History Museum. To see how commercial paper is manufactured. To deliver Christmas stockings. To see an exhibit of Egyptian records. To see early records. To study designs suitable for book covers at the Metropolitan Museum. To the Barnard Cloisters to see medieval architecture

*Work in subjects of study*

*Reading.* Reference books in connection with "How Man Has Made Records." Individual library reading. School bulletins and magazines

*Spelling.* Words needed in writing. Many of this class spelled at seventh-grade norm and so were excused from any spelling drill

*Written English.* Writing for the class magazine. Writing for the school magazine. Writing reports and book reviews. Making bibliographies

*Fine arts.* Old and rare books. Beautiful bindings. Making illuminated manuscripts. Marbled paper. Painting and modeling

*Industrial arts.* The book industry. Printing processes. Making paper. Machine-made paper. Handmade paper. Kinds of books. Making newspapers, magazines, and books. Using type

*Social studies.* Evolution of the book. Egypt, Greece, Rome, China, England, Germany, the United States. The Middle Ages. Monks and monasteries. The printing and bookmaking industries. History of famous libraries

*Music.* Special work with the music teacher. Learning songs to help with units of work or school activities; for example, Latin hymns. Composing. Creative Music (making and playing on psalteries and other simple stringed instruments)

*Arithmetic.* Actual needs of the school: paying own bills, running the "Paying Bills Department," making graphs of results to show how much money was actually handled. Textbook work: review of fractions, decimals, simple per cent, denominate numbers, area and volume. Text: Knight, Studebaker, and Ruch's "Standard Service Arithmetic," Book III

# CHAPTER VI

## LISTS OF OTHER UNITS FOR EACH GRADE

It will bear repeating that in developing units of work there has been little thought that they would be taken by teachers and used without deviation from the suggested outline. Indeed, the greatest value which any unit of work can have is that it allows for initiative of teacher as well as of pupil. It allows, too, for the use of the special environment in which the school is located. In trying the units which have been described in detail in Chapter V it is imperative, if the criteria which have been set up are met, that the teacher think of them as guides rather than as required procedures.

In this chapter are given lists of other units which have been tried with more or less success. An ideal arrangement in any course of study would be to have a suggested list for each grade of ten or twelve units which have been worked out through careful experimenting. Teachers who wished to do so could then choose the ones which were most suitable for their own needs, developing them in coöperation with their own classes and in accordance with the particular needs of the class.

Most teachers, and particularly intermediate-grade teachers, are bound to some extent by a ready-made course of study. A careful examination, however, of that course of study will oftentimes suggest a center of interest around which much of the work of the class can be organized.

The questions often are asked, "Do you use the same unit every year?" "What determines your choice?"

In the first and second grades practically the same units are used each year. The variation occurs in the different phases of farm, village, or city life which are emphasized. In the other grades there has been less uniform recurrence of units due to a greater need for search for suitable ones. (The Boat unit was used many times in the third grade. The Food unit has always been used in the fourth grade. The Toy unit has been used for four years in the fourth grade. The Banking unit has been used for three years in the fifth grade. The unit on records has been tried three times in the sixth grade.) This is not to say, however, that water transportation in the fifth grade, for example, is the only body of information which fifth-grade children the country over should experience. The elementary school does not believe that there is any one specific body of information through which ten-year-olds, for example, are educated, but that there are any number of activities through which their best growth may be secured, and it is earnestly endeavoring to find a few of these.

When units such as the Community-Life ones in the first and second grades have been found, they will probably be used every year. That would be desirable if the unit is broad and flexible enough to allow opportunity for pupils to share in purposes and plans, and if each step in the development of the unit is not planned in advance and imposed upon the class. Although the units which have been tried have not been the same year after year, due to an anxiety on our part to find many suitable ones, there has been a real value in the variation. Pupils and teachers have had to work and to grow together.

## *FIRST GRADE*

### STUDY OF COMMUNITY LIFE. THE CITY

This is a large conception which is employed to give a framework upon which more definite and particularized units are based. It has its foundations in the child's interest, in his own intimate knowledge of his little world. It proceeds through the reproduction in the classroom of a simple community, such as a village with its houses and stores. And it gives the child a wider extent of social meanings by going out into the real community and then reproducing in dramatic play in the simple classroom community the activities of actual situations. This unit may be very rich in itself, but it becomes richer still when other units are woven into it.

### FOOD UNITS

*Apples and fruit.* Apples are brought to class. Apples are baked and apple sauce made, and both are served. The children tell about orchards they have seen. They go to farms and markets. They find out what kinds of fruits are in the neighboring markets. Where do the apples grow? They may give an apple play which shows the farmer planting his trees, the gathering of the apples, the apples in the markets, and the final use of the apples by the people of the little community.

*Vegetables.* Vegetables are good for food. Where can city people get enough of them? Go to the stores. Go to the markets. Go to the truck farm or to a garden. Bring home vegetables. Cook carrots and make vegetable soup. Write stories about the stores and markets and vegetable farms. Over on the other side of the river which runs by the little town is the vegetable farm from which the vegetables are brought for the village people. The children made the farm and the village. They play at bringing the vegetables into the village. The storekeepers sell the vegetables to the people.

*Milk.* Milk for the morning luncheon. Making butter. Cows on the farm. Sending the milk to town. Milk trains. The large milk plant in the city. Delivering milk in the morning to city customers. Going to the dairy farm. Going to the milk plant.

If these topics become the centers from which a rather simple study of milk is made, the child will find much to do, much to think about, and much to make over into his own understanding of an important part of his life.

*Eggs and chickens.* Little chickens are kept in the pen of blocks in the schoolroom. Out in the yard is a place where they can stay with the mother hen. They were bought as eggs from the farmer. They were hatched by the mother hen in the barrel in the yard. Feed the chickens. Watch their feathers begin to grow. Go to the farm to see the chickens. What can the farmer do with all of them? He can sell them in the city.

### Shelter Unit

*The little village.* Build houses of blocks or boxes from the store. Build stores and city buildings. Lay out parks and streets. Make furniture and decorations for the houses. Make articles to sell at the stores. Set up a little village. Play with the houses.

That will furnish impetus enough to justify trips to see buildings and methods of construction. The whole study is valuable if it is kept on the child level, just enough being added to make his play more meaningful.

*Lighting.* Children wanted to put lights in some of the little houses. They did, and from that went on to make some experiments with batteries and doorbells and wires.

### Transportation Unit

*Trains and trucks.* If you have a city and farms, you must have trains and stations and markets. If there is a river, there must be bridges and boats and docks. There will be trucks on the streets. The possibilities in dramatic play for fixing of meanings are limitless.

Trips that have been taken should be represented on the floor by blocks or large lines. Trips may be traced on large maps. The opportunity for getting an elementary understanding of directions and locations is not to be missed.

## *SECOND GRADE*

It will be noted that many of the units for this grade are similar to those which have been worked through in the first grade. They are, however, more extended and more complicated because the pupils are able to bring more experience to bear upon the interpretations of the life of the city.

*Making a play city.* See Katherine L. Keelor's "Second-Grade Curriculum Studies," a Lincoln School bulletin; Katherine L. Keelor's "Making a Play City," in *Progressive Education*, Vol. I, No. 2; and page 89 of this book.

*How primitive people lived.* Comparisons between primitive and modern homes, food and its preparation, clothing, and making of tools. A trip to a forest or a cave would be a good beginning upon which to build an answer to the questions "Suppose we had only this forest and none of our tools, how could we make a house? how could we get food?" A long train of activities ending in many important generalizations may be carried on.

*Studying New York's food supply.* The people in this city. Where they get their food. Stores, markets, farms. The work of the store man. Food supplies in the markets. Food supplies on the farms. Kinds of food. Transportation and methods of saving the supply. Keep all this on second-grade level.

*How the city and the farm need each other.* Another phase of community-life study. This might well make use of dramatic play with trucks, trains, and boats going between farm and city or city and city. The farm in one part of the classroom. The city in another.

*A simple study of electricity.* Lights, batteries, connections, bells, trains, switches, would be used only incidentally, if they had been used in first grade.

*The postman.* Build the post office. Put up letter boxes. Make boxes for use in distributing mail. Visit the post office. Follow the postman on a part of his rounds. Write letters. Stamps. Addressing envelopes.

*The play store.* This store may be made large enough to serve as a real store for school supplies, which may be bought wholesale and sold retail. A large amount of first-hand information about conducting a store will be needed and should be gained by visiting stores. See Keelor's "Second-Grade Curriculum Studies," pp. 41–44.

As a matter of interest to other workers and without attempting any kind of description of them, this additional list of activities of varying possibilities which have been used in the second grade is given:

Making a scrapbook of pictures of New York long ago and now.
A study of primitive homes. Comparison with modern homes.
A study of primitive clothing.
People we need in the city: the postman, the fireman, etc.
The out-of-doors. Seed collection. A spring exhibit.
Making a book of stories of the year's experiences.
Making a book of poems which were liked most by the class.
Making original plays.
Special days and celebrations.
Making aprons and keeping them clean.
Learning to tell time.
Playing games and using numbers in scoring and counting.
Making a large floor map and playing on it.
A study of modern buildings: brick, concrete, steel.
Transportation within the city.
The farm, and the food it supplies to the city.
Keeping pets.
Making a museum for exhibiting scenes of primitive life.

Some of these activities covered only a brief period of time and are very limited in their richness in content. They are given to show that many limited units frequently are possible when it is not permitted to give the whole daily program over to the unit idea.

## *THIRD GRADE*

*Boats and boat-making.* An excellent unit for those who live where boats are to be seen. Begin with making boats and telling about boats. How earliest boats were made and the history of boat-making are topics of great interest which lead into a review of world progress. Egyptian, Phœnician, Greek, Roman, Chinese, Spanish, English, and American boats are built or pictured. Much history and geography should grow up. There is much reading material which can be used. See Nell Curtis's "Boats" (Rand McNally & Company). See also The Twenty-sixth Yearbook of the National Society for the Study of Education (1927), pp. 280–282.

*The aquarium.* Set up and care for the aquarium. The pupils should do this. They should choose what is to go into the aquarium. Follow the development of snails and frogs. Feeding; cleaning; keeping the aquarium. See "Schoolroom Aquaria," a Lincoln School bulletin.

*Bulbs and bulb-planting.* Make bowls. Plant bulbs. Study growth of bulbs. Where do bulbs grow best? The bulb business. Sell bulbs. Make Easter gifts. Choose right kind of bulbs.

*Silk.* This unit grew out of a study of China. The cocoons. Reeling silk. Making silk cloth. Where silk is produced. Exhibits of silk. Designs and decorations. Tie and dye silk handkerchiefs. (See page 137.)

*Pottery.* Digging clay from the earth. Trying to prepare it for modeling. Making clay bowls and dishes from commercial clay. Visiting museums to see Indian pottery and Egyptian pottery. History of pottery. Designs. Making pottery by different methods: modeling, coils, throwing. Writing a pottery book.

*A study of rocks and fossils.* Classifying the summer collections of rocks. Visiting mineral collections at the museums. Experimenting with iron ore to make paint. Experimenting with the delta table to see how rivers and streams wash away soil and sort out pebbles, sand, and silt and sometimes help to form rocks with the sediment. Studying fossils. Collection of fossils. Studying corals.

*A unit of world geography.* The boat study would lead into this. Any food study would do it. The pupils learn to use world maps. They study particular areas which have interested them. They trace trips and get a general acquaintance with the world map. They give a geography play based upon food distribution or boat routes. They read many library books of travel and geography.

## *FOURTH GRADE*

*Food studies.* MILK. This grew out of the interest in foods. Kinds of cows which are best for milk. Milk production and distribution. Milk as a food: its composition. Experiments with Babcock tester. Rennin. Making butter and cheese. Kinds of cheese. Pasteurization of milk. Bacteria. Use of the microscope. Milk and cheese exhibit.

FISH. Kinds of fish. The fishing industry. Salmon. Where the salmon is found. The life history of the salmon. Preparing the salmon for the market.

EGGS AND POULTRY. Keeping chickens. Incubator hatching. Care and feeding of poultry. Varieties. Egg-laying breeds. Use of eggs in cooking. Extent of egg and poultry industry. Shipment and storage. Preservation of eggs in water glass.

*Toys and toy-making.* See pages 321–325. Plan to make or repair toys. Visit toy shops and factories. Make a collection of toys. Study toy-making centers: Germany, Japan, the United States. Discuss the history of toys. Contrast handwork and factory work.

*Lumber and houses.* Showing different kinds of houses. Pupils make small models. Individual reports on types of homes. Lumber regions of the world. Visit a saw-mill and an exhibit of woods at the museum. Make an exhibit of woods.

*Clothing (with particular reference to cotton).* Weaving and a study of the textile industry. Trip to clothing factory. Geography of cotton. Kinds of cotton cloth. Cotton bolls. Preparing cotton for weaving. Thread. Cotton mills and their location.

*History plays.* Pupils in fourth grade like to dramatize, and they like history stories. The unit begins with attempts at dramatization. The history stories are used to make dramatization more meaningful through furnishing a better content for the plays which are made by the pupils. Special features of value are reading for information, planning scenery and costumes, writing directions and dialogue, organizing the information into important episodes, working out the final arrangements for the production of the plays. William L. Nida's "Following Columbus" is a good source for history stories to be dramatized.

*Making blue prints.* "Could I make pictures like those?" asks a pupil who has seen some leaf blue prints. Printing frames and blue-print paper are provided, and the class does make blue prints. They use leaves, flowers, and negatives for printing. Each one may make a valuable collection. Later they go into an elementary study of photography.

*Medieval life.* "Men of Iron" by Howard Pyle and "The Little Count of Normandy" by Gertrude Stein are good stories to read. They furnish a basis for work in medieval life. Scenes from them may be used for dramatizations. Making costumes and scenery. Armor, pennons, plumes, castles, and other necessities for vividness. There is a great wealth of library reference reading which can be done.

*Pottery.* This unit seems even more suitable for fourth grade than for third grade. The richness in history and science appeals particularly to children of this age (see page 265).

## *FIFTH GRADE*

*Colonial life.* Out of the textbook on American history which was being used developed the Colonial Life unit. As the unit grew the textbook was almost forgotten. The library took its place. Making block-printed textiles, britannia-metal articles, candles, soap, hooked rugs, a painted frieze showing the movement of the settlers toward the West, etc.

*Land transportation.* Similar to the Water Transportation unit except in its content. Equally rich in content and in kind of activities. Complete correlation between reading, spelling, language, fine arts, industrial arts, history, geography, and science.

*Lincoln Nature Corporation.* This corporation was established to raise canaries, rats, etc., to sell stock in the business, and to make a profit from sales.

CANARIES. Making the cage. Buying registered stock. The canary show. Caring for the birds. Young birds sold at maturity.

RATS. The white rats were kept, and a study of feeding was made. Groups of rats fed differently were carefully weighed and charted for growth.

INCUBATOR HATCHING. An incubator was built and eggs were hatched. The feeding of the chicks was a special study.

BULBS. Bulbs were planted and sold. Planting in the dark room. Watching growth. Caring for the plants.

*Making and playing on marimbas.* See page 326. Many valuable units of work have developed in connection with the Creative Music. Making drums and rattles in fourth grade; making wind instruments in fifth and sixth grades; playing on glasses in third grade. These are real units of work and in many instances have been the basis for all the work of the classroom for several weeks.

## *SIXTH GRADE*

*Travel talks.* Pupils who have traveled or have seen unusual places prepare talks and exhibits for the others. Finding illustrative materials; organizing what is to be said; answering questions; making drawings and maps; gathering additional information; summarizing in the form of a permanent record, — these are indications of the values of this unit.

*Ballads.* Perhaps a ballad is written for the magazines. Other pupils try writing ballads. The whole class becomes interested in them. Or maybe the ballads in some story of earlier times start the interest. Or, again, the class may plan to give a play based upon some old ballad. A few topics of interest would be famous ballads, who wrote ballads, music to go with ballads, the kind of historical setting in which ballads flourished most. And some of the special activities might be writing ballads, making a book of ballads, costuming a play, painting and drawing for illustrations, giving a play, or reading ballads at an assembly.

NOTE. In the intermediate grades the trial of units of work had a slower beginning. Up to two or three years ago the organization of materials in our sixth grade was essentially a subject organization. That accounts for the small number of suggested units.

## *THE WHOLE SCHOOL*

Several units which have been mentioned or described at length affect the life of the whole school. They furnish perhaps the best opportunities for general coöperation, for developing the feeling of oneness among the classes, for critical examination of the standards of the whole school, and for emphasizing larger social meanings and obligations. The following are most representative and have been most educative:

Bazaar for nursery equipment (see page 15).

Creative Work period (see page 329).

The Elementary Council (see page 12).

European relief bazaar. This has been described in a leaflet by that name published by the Lincoln School.

Publishing "Lincoln Life" (see page 4.)

# CHAPTER VII

## OUTCOMES IN SKILLS, INFORMATION, HABITS, AND ATTITUDES

A school is judged by the results from its work. Can its pupils read? Can they spell? Can they do arithmetic? Do they know history? Do they have good habits of work? Do they make use of the materials which they find at hand? Someone always and very appropriately is wanting to know just what the results are.

It would be presumption for a school to claim all the credit for teaching its pupils to read. Home libraries do much to assist. No school can say honestly that pupils have learned all they know about geography because of school instruction. There are the moving pictures, the magazines, the radio, and the automobile. No school can assume that habits are really formed under its tutelage. There are parents and brothers and sisters and playmates. What can be said, however, is that the school has set up conditions which would foster the best growth in reading, in learning geographical meanings, and in acquiring desirable habits of work. And it can check to find what has come about from all the forces to which the child has been exposed. It can remedy defects. It can act as a clearing house for the proper direction of all the educative factors in the child's environment. This means that in considering outcomes not only must the actual classroom work be scrutinized but also the school's relation to the home and the outside activities.

## OUTCOMES IN SKILLS

For seven years very definite records of achievement in school subjects of study have been kept. For the last five years tests have been given twice each year. Stanford Achievement tests have been used for the most part, but there have been variations to destroy the effect of familiarity with the tests. The results of the tests have been made into group and individual charts and graphs.

## INDIVIDUAL RECORDS

The most valuable use to which the results of tests have been put is to give a rather comprehensive view of individual pupils. From the study of such graphs as the two following it is possible to note special weaknesses and special strengths of pupils. Fig. 1 shows the records of a fourth-grade boy in all skill subjects in October and in May. In what subjects does he need special attention? What improvement does he make during the year? Does he grow in a way consistent with his chronological and mental ages? Graphs do not reveal many things which only investigation of the original responses on tests can give, but they do tell much. Graphs similar to those in Figs. 1 and 2 can be made up from the school records for any pupil about whom there is question. Fig. 2 was made because the pupil was doing unsatisfactory work in October and needed to be checked most carefully to see that any advance resulted before May. Fig. 1 shows a pupil who could be excused from much formal school work without serious handicap.

In the graphs in Figs. 1–7 the absolute zero of achievement is grade 4–0. In Figs. 1 and 2 we have included columns representing mental age and chronological age.

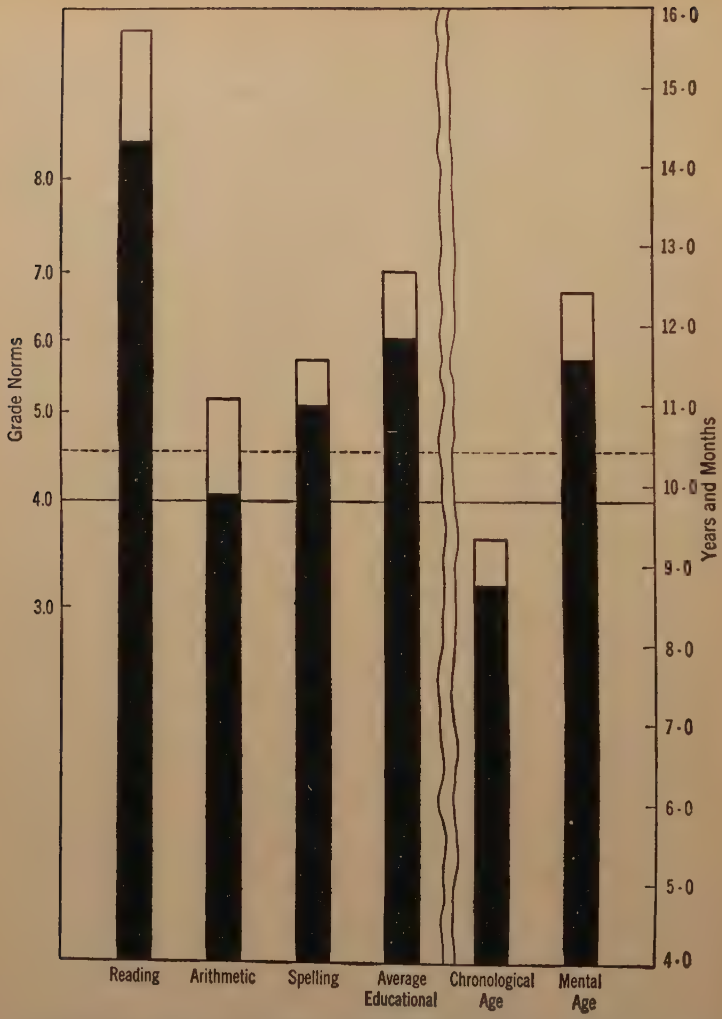

FIG. 1. Reading, arithmetic, spelling, and average educational achievement (Stanford Achievement Tests) for October, 1925, and May, 1926, of a boy in the fourth grade of the Lincoln School. Also chronological age and Stanford-Binet mental age. (NOTE. In Figs. 1 to 7 top of vertical column indicates October achievement; top of space above it, May achievement)

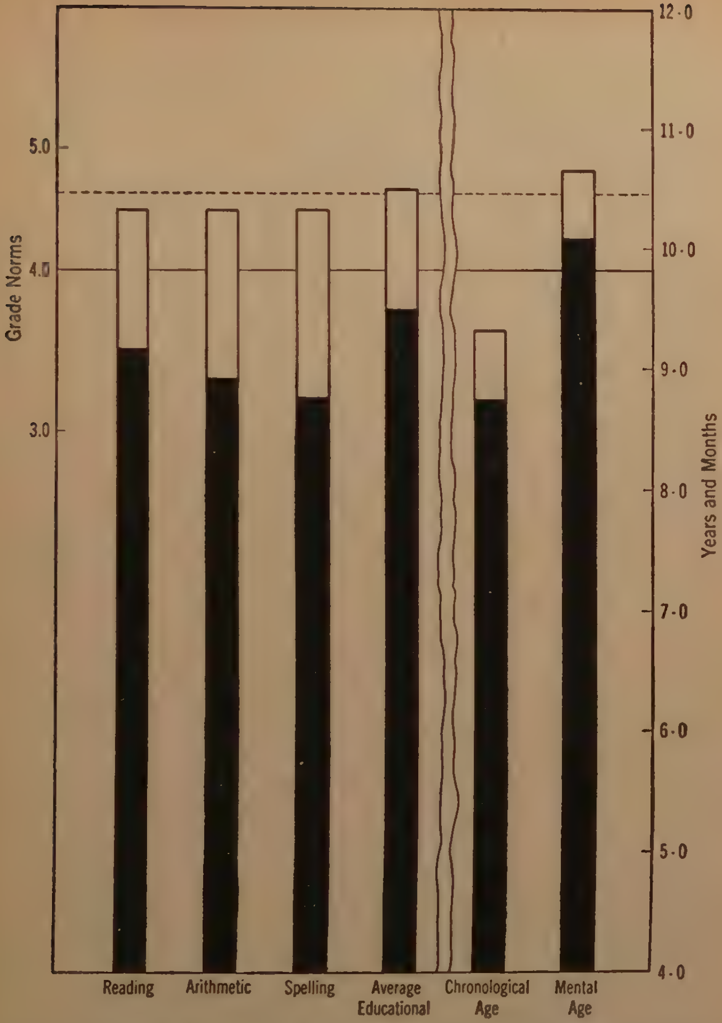

FIG. 2. Reading, arithmetic, spelling, and average educational achievement (Stanford Achievement Tests) for October, 1925, and May, 1926, of another boy in the fourth grade of the Lincoln School. Also chronological age and Stanford-Binet mental age. See Note below Fig. 1

By including them in the graph, comparisons between them and achievement can be made more easily. In Figs. 1–7 the solid horizontal lines represent October norms; dotted lines represent May norms.

The mental-age record of each pupil is available. The Stanford-Binet Intelligence Test is given to all pupils, and the records are kept up to date by repeating the test in cases of doubt, especially in cases of low intelligence quotient.

Tests are given until there is reasonable surety that no injustice has been done. It is possible from Fig. 1 to see that the pupil was doing much more than his chronological age would warrant and as much as his mental age might urge. Such is not the case discoverable from Fig. 2. These graphs can be made easily by classroom teachers from records in the psychologist's office.

## READING

A discussion of reading or of any other of the school subjects means reviewing the pages of this book and gathering up the strands which are to be made into a more accurately focused picture. How does the school teach reading? What are the results of the teaching?

In the very beginning there is no pressure brought to bear by the teacher to force reading at once. The teachers have usually put up bulletins which welcome the children to school or which say something about the summer and its experiences. There are pupils' names and names of various classroom materials prominently attached to the owners. Chiefly, however, the emphasis is placed on readiness for reading. Busied with things of personal interest, the pupils rather naturally come to reading the bulletins which record these interests. The teacher has written:

How did you come?
By train?
By boat?
By automobile?

Appropriate pictures accompany the bulletin, and pupils' names are put in the proper place. This is the beginning. Other experiences, other activities, are talked about, and the pupils make up simple stories which the teacher makes into a bulletin. The bulletins are printed in large manuscript and are on oak tag paper. They are displayed until the pupils are rather familiar with them.

Morning lunch is served to primary classes. The teacher makes this bulletin:

I will take milk.
I will take crackers.
I will take an apple.

Very soon pupils know where to place their names, because they want to be sure to get the lunch they choose.

A vocabulary based upon the room activities begins to take form. If it is a farm activity, such words as "farm," "farmer," "house," "barn," "horse," "sheep," "cow," and "field" begin to become a part of the child's reading vocabulary. He recognizes them when he sees them and can now assist in preliminary reading of the bulletins about the farm activity. If it is a village community he learns very soon such words as "streets," "houses," "stores," and "buildings." The learning of the words is incidental, however, to knowing the meaning of the sentence in which they occur. And that knowing of the meaning is again incidental to having had the real experience out of which the sentences grew.

As a consequence, the reading vocabulary is built rather slowly at first. In preference there is being developed the richness of experience, the need for reading, and a familiarity with books which the child sees others using and which he begins to want to use. Tests of reading ability for the first grade are not very satisfactory. From Fig. 3 it is seen that in the second grade the norm for the country at large has been reached. Very little time is given in the first grade for actual training in reading. Twenty minutes daily is as much as any group has. During that twenty minutes the teachers do begin to use some practice materials. They take the bulletins which have been made and cut the sentences into parts to be matched. Then they provide for drill on significant words. They play games and make an effort to stimulate those pupils who are ready for reading. They help those in every way possible to master the skill, taking care always that the child does not wish then to devote himself wholly to reading.

Besides the bulletins, copies of which are made into mimeographed class booklets, the pupils usually read two or three easy books. There is a supply of easy books always available for individual use, and many pupils read large numbers of books before the end of the first grade (see pages 68, 84, 113, 124, 130).

In the early part of the second grade and in special cases still later this same building up of a rich experience out of which the demand for reading becomes insistent is continued. But usually by the middle of that grade pupils begin to make independent use of books. They begin, under guidance, to select books from the library.

PUPILS BEGIN TO MAKE INDEPENDENT USE OF BOOKS

This is a second-grade class. Some are reading independently. Others are being helped by the teacher. Still others are using reading checks to help themselves

The library reading in the school is of two kinds. First of all comes reading for pleasure from books which appeal to a particular taste. The teacher suggests books, other pupils report upon books of great interest to them, or the child rummages among the books until he finds the one which suits him. It becomes the duty of the teacher and the librarian to guide wisely so that books of more than one kind are read, so that bad reading habits are not being formed, and so that there is a constant growth in appreciation of better books. The first step in this guidance is the making of suitable individual lists. Pupils choose from the list which has been suggested. The librarian calls to the attention of teachers and pupils new or unusually interesting books. Pupils make oral or written reviews of many of the books which they read. The reviews are not required invariably, but they are encouraged. Pupils use the written review cards which are kept in the library when they are at a loss to know what book to take. Teachers check upon reading habits by keeping account of what books are read by the child, the length of time taken to read the books, and the contents of the review if one has been made. Pupils are asked to read aloud to the class on various occasions and to tell what they have been reading at other times. The second kind of reading in the library is for information. Beginning in the second grade, pupils make constant use of the books of reference which the library contains. Efficiency in such use grows as the child grows. Many lessons in finding words in the dictionary, in using the encyclopedia, in using the card index, and in making bibliographies are given to pupils in the fourth, fifth, and sixth grades. Books are used effectively either for increasing information or for obtaining pleasure.

The school librarian has said, "Given a real library, which implies not only books and a room but someone who has time and interest to make these books and this room function as a living part of the school, there is hardly a form of school and classroom activity which the school library cannot share and help."[1]

Besides the library reading there is much classroom reading. Letters; school notices; class bulletins; class books of trips or other experiences; records from other classes; original poems and stories; school papers and magazines, — these are only a few sources of reading materials. Since reading functions in such a real way in the life of the child, it will not be strange to find that reading norms for the country are consistently surpassed. Fig. 3 shows that. Even the rather high mental age of the pupils would not lead one to expect such reading ability.

"Are there pupils who do not read well?" "What is done about it?" First of all a careful individual diagnosis is made to find out the difficulty. Then the very best methods which can be found or devised are used to eradicate the trouble. Time and thought are given to special help either by the class teacher or by a trained person from the psychologist's staff.

No specific time is given on the program for reading in grades above the third. Library periods are often set aside for the whole class, and there are times when individuals can be helped with difficulties, but the reading is incidental to other phases of the classroom work. This does not mean that good literature is neglected; it does not mean that pupils do not read aloud; it does not mean that reading is not significant. It does mean that reading is used for pleasure or as a tool. It means that reading is considered, as it should be, a contributor to each part of school work and to the reader's personal happiness.

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[1] Anne T. Eaton, "Classroom Activities and the School Library," Sixth Yearbook of the National Association of Elementary School Principals (1927).

THEN THE VERY BEST METHODS WHICH CAN BE FOUND ARE USED TO ERADICATE THE TROUBLE

These third-grade pupils are using various methods of helping themselves to overcome reading difficulties

Work in language and composition is also found in each of the classrooms, not as a separate subject of study but as an integral part of the whole work of the class.

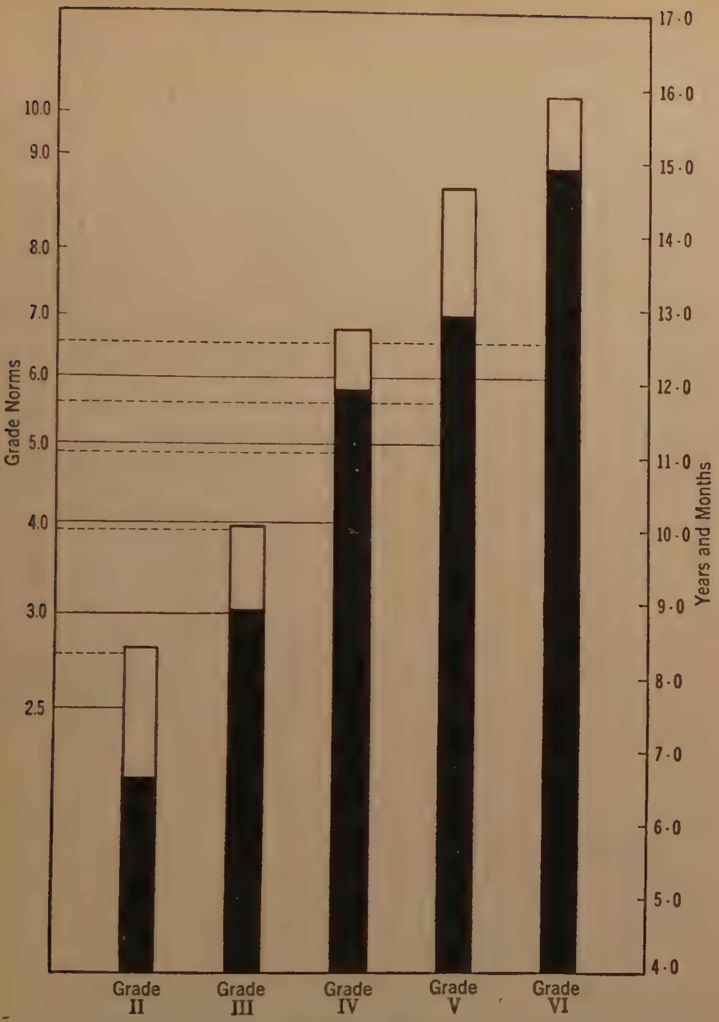


FIG. 3. Reading achievement (Stanford Achievement Tests) of Grades II to VI in the Lincoln School for October, 1925, and May, 1926. See Note below Fig. 1

——————— October norm
- - - - - - - - - - May norm

Oral composition is frequent, not for the sake of drill in oral composition but because an individual or a group has had an experience which needs to be talked about. Written compositions, too, are frequent, but always the writing is about some subject which occupies the attention of the class or the individual.

There are, of course, periods of instruction. Margins; composition form; organization; punctuation; mistakes in grammar; choice of words; vividness, — all these and others often need special attention just as do defects in reading. The important emphasis is upon supplying a background and fostering the need for talking or writing, and the formal instruction is given when a need, either of an individual or of a group, arises (see pages 80, 100, 111, 122, 143, 167, 211, 212, 229).

## ARITHMETIC

Fig. 4 shows our status in arithmetic. The graph gives a combined result from reasoning and computation tests.

What opportunities are given for using numbers?

Measuring lumber for buildings.
Measuring cloth for aprons and costumes.
Measuring ingredients for recipes.
Counting lunch orders.
Buying supplies for cooking, for aquaria, and for plays.
Going on real shopping expeditions.
Paying for supplies.
Keeping account of school expenses.
Handling real money through paying the school accounts.
Taking care of the $5 deposit for supplies.
Making change.
Sharing in room business ventures; as, the jelly business in the fourth grade.

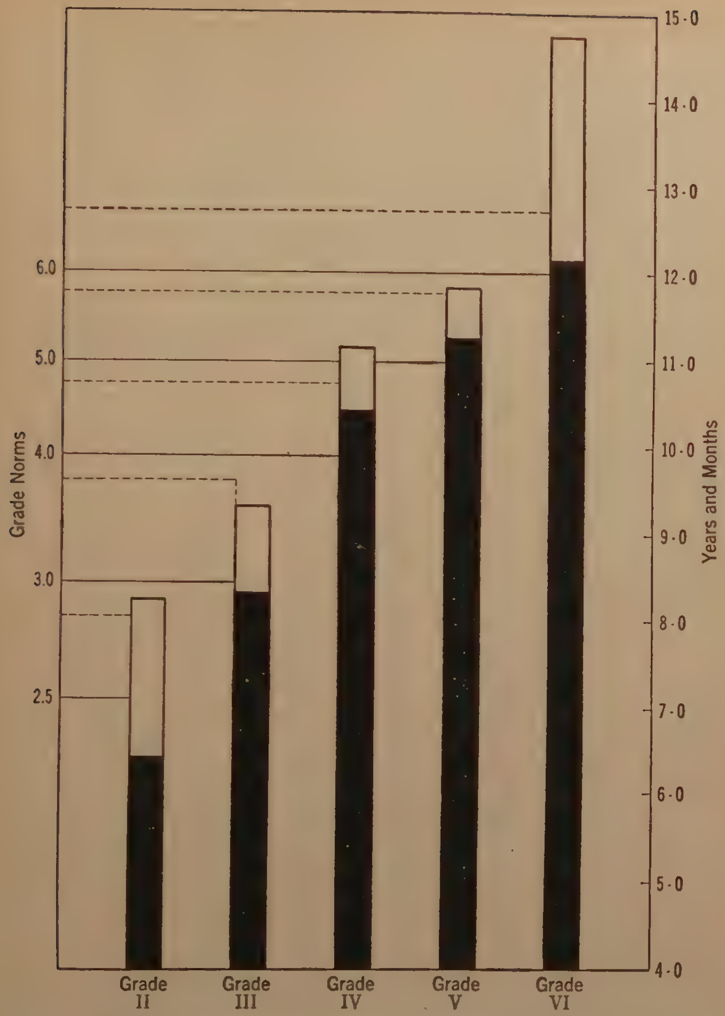


FIG 4. Arithmetic achievement (Stanford Achievement Tests) of Grades II to VI in the Lincoln School for October, 1925, and May, 1926. See Note below Fig. 1

——— October norm
- - - - - - May norm

Acting as treasurer in class enterprises.

Collecting and accounting for money for the Junior Red Cross and a nursery.

Buying and selling shares in the Nature Corporation.

Having real banking experiences through the Lincoln School Bank.

The approach to arithmetic is not hurried. In the first grade and the first half of the second grade only occasional periods are given to number work. Number experiences are frequent, but actual drill is rare. As soon as the number experiences have been sufficient to make the need for fundamental processes such as addition and subtraction very clear to the pupil, periods for intensive practice in number skills are provided (see page 172 for an example of how needs arise). The amount of time given to such drill varies from four thirty-minute periods weekly in the sixth grade to forty or fifty minutes weekly in the second grade. At first this time is given to specific drill based upon real needs of the child. Later the pupil finds that increasing his skill becomes incentive enough, and real needs in actual situations are lost from the immediate purpose. Drill for skill becomes an end in itself. Practice materials (see page 318) have been developed in the school. Other practice materials developed by other workers are used, and in the sixth grade at times a textbook has been used.

The teachers have agreed that it is better for pupils in the first six grades to attend to specific needs in real situations than to gain skills for which they have no use.

Fig. 4 shows, however, a reasonable proficiency in number skills even with the small amount of drill time which is given. The average (mean) intelligence quotient of the elementary school has been approximately 119, and that would suggest an accomplishment above the country-at-large norms as possible.

The elementary staff has felt definitely, however, that for a child of eight and a half years, at the beginning of a fourth grade and with a mental age of eleven and a half years (see Fig. 1, for example), to work at the level required by such a mental age would be wasteful and unnatural. To do that the child would be required to work at sixth-grade level. In such cases the school determines by careful diagnosis whether there are any number concepts which handicap the pupil by their absence. If there are none, he is excused from wasting his time on drill for the sake of achieving skills for which he would have no use.

## SPELLING

Spelling and arithmetic fall in the same class of skills. They do not correlate highly with mental age. The accomplishment of the school in spelling is shown in Fig. 5. It is above the norm for the country at large in grades beyond the third. The school does not provide for a large amount of formal drill in the first three grades. A list of words most used by the second grade has been worked out and is made the basis for drill there. In the fourth, fifth, and sixth grades the Horn-Ashbaugh lists are used to supplement individual lists made by each pupil. Pupils who spell at the norm of the grade above their own are usually excused from any formal spelling practice.

## OUTCOMES IN INFORMATION

We clearly recognize here the influence of the environment from which most of our pupils come. Their homes are above the average, and their cultural contacts are broad. New York City is itself rich in the opportunities which it affords for increasing information and knowledge. It has been shown that the school has tried to build upon and to reënforce the best meanings which the environment supplies.

What important meanings, what significant generalizations, are noticeable in the program of work as detailed in Chapter V?

How city people live.
Sources of food supply.
Orientation in time and place.
The workers of the world.
Distribution of food and other materials needed by man.
From primitive to modern methods.
The evolution of processes.
Hand work versus factory work.
Social service.
What others do for us.

Those are a few, and they point out that the school has been concerned to widen the understandings of the child through situations which were very close to him because they grew out of his normal activities.

It is worth noting, too, that the pupils receive a general view of world history two or more times in their advance through the grades. It comes through such units as Water Transportation and How Man Has Made Records. Then there are very specific periods of history covered in the Primitive Life, the Medieval Life, and the Colonial Life units.

The same could be said of geography. World geography many times, special geographical areas studied, and much map work. The work is an outgrowth of whatever the class has chosen as its center of interest. It is

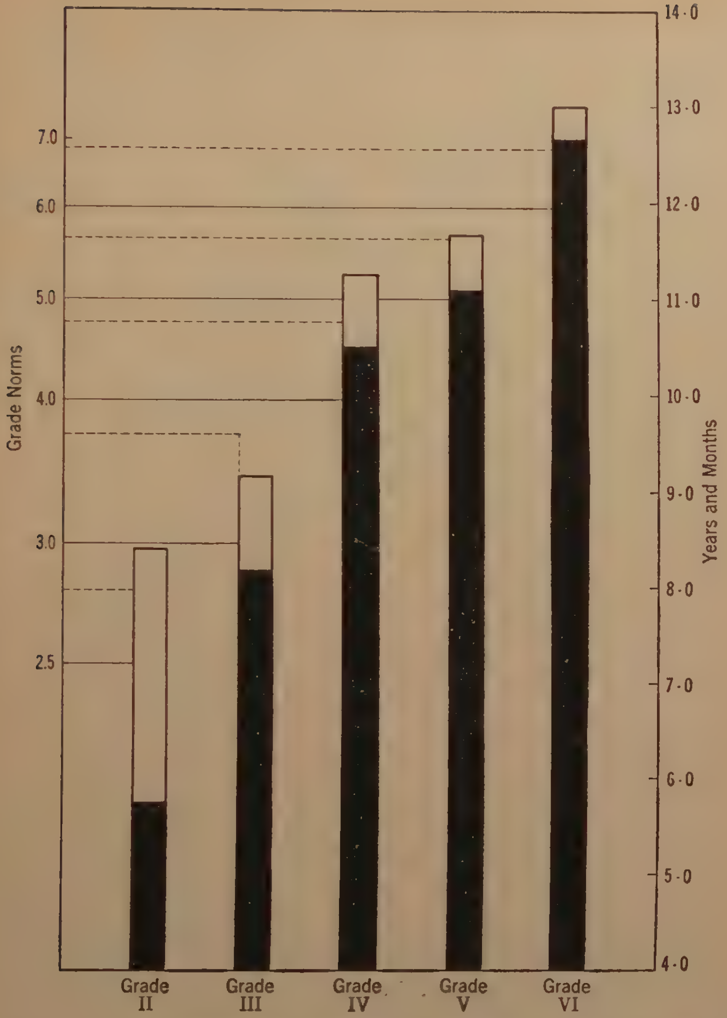


FIG. 5. Spelling achievement (Stanford Achievement Tests) of Grades II to VI in the Lincoln School for October, 1925, and May, 1926. See Note below Fig. 1

——————— October norm
- - - - - - - - - - - May norm

not covered incidentally, but every effort is made to make it a vital part of the child's experiences and a possibility for future reference when he needs it to help interpret further experiences.

The science work of the school is important. In each unit of work it occupies a prominent place. These are examples of science in the school:

Farm animals, p. 64.
Studies in animal feeding, animal breeding, p. 66.
Cooking fruits and vegetables, p. 83.
Electricity: experiments with batteries, lighting, etc., p. 83.
Nature excursions in spring and fall, p. 83.
A truck farm: vegetables, p. 79.
Wheat, p. 99.
Milk: pasteurization, food elements, p. 126.
Steam: experiments with, uses of, p. 127.
Silk cocoons, silk, p. 137.
Cotton seeds, cotton, p. 145.
Preserving and canning fruits and vegetables, p. 162.
Floating bodies, p. 182.
The stars: astronomy, weather, climate, etc., p. 232.
Change of tadpole to frog, p. 252.
The aquarium, p. 252.
Siphons, p. 265.
Minerals, rocks, and fossils, p. 265.
Blue prints and photography, p. 267.

These items have not been arranged in a course of study, and they are probably no more significant than many others which might have been used by teachers and pupils. They have been really used, however, and that makes them significant.

Figs. 6 and 7 show a high standing in informational subjects. The school does not say "We did it." It says "We helped do it." The record shows that to be true.

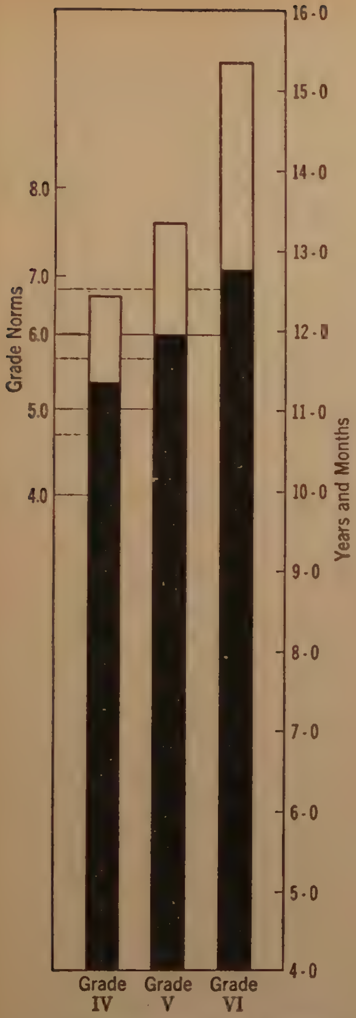


FIG 6. Nature-study and science achievement (Stanford Achievement Tests) of Grades IV to VI in the Lincoln School for October, 1925, and May, 1926.

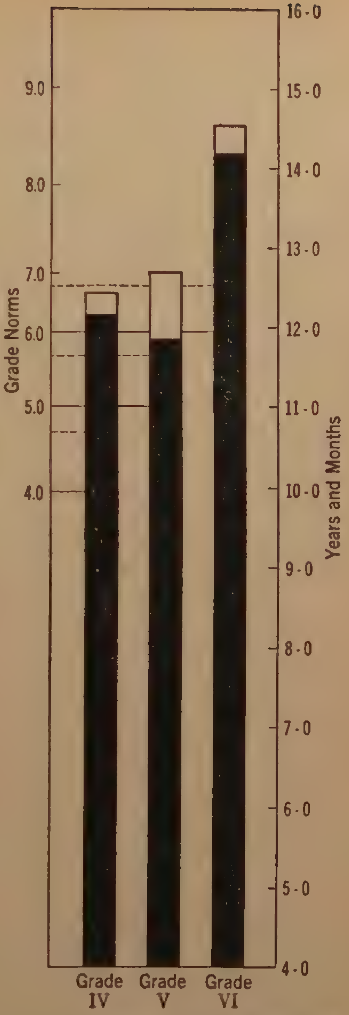


FIG. 7. History and literature achievement (Stanford Achievement Tests) of Grades IV to VI in the Lincoln School for October, 1925, and May, 1926.

## OUTCOMES IN HABITS AND ATTITUDES

No school can honestly claim that the formation of habits and attitudes is altogether the result of its work or even primarily so. The inheritance; the home environment; the reading at home; the leisure employments, — all these have to be taken into account.

The schools can be intelligent about what habits and attitudes they would wish to help develop, and they can give opportunities for practice in them. The claim they can then make is that they have encouraged right practices. They may go into the home and try to show that every factor in the child's life should tend toward the fixing of the same habits and attitudes which they wish developed. Thus they become the unifying agency in the development of the child.

A plan used by the elementary teachers to find out what they and the school were doing to develop character was worked out as follows. First of all, each teacher listed the twenty-five traits of character which she wished to see developed most. Then all these lists were combined into a single list of the traits most frequently mentioned.

This list of traits became the basis for the report to parents as to the traits which needed attention in the case of any particular child.

NOTE. This is the outline of attitudes and habits upon which the comments on the report card are based.

*Responsibility*

Does he accept a fair share of group responsibilities?

Does he perform these duties to the best of his ability?

Does he take any responsibility for affairs of value to the whole school? (*Hall, gymnasium, council, library, and lunchroom conduct.*)

Does he make any special efforts to contribute to the success of the work of his group? (*Exhibits, reports, class actions when teacher is absent.*)

Does he accept responsibility for taking care of his own possessions?

Does he hold himself to a high quality of work?

Does he hold himself responsible for completing a piece of work which he himself has initiated?

*Initiative*

Does he suggest new undertakings for his group?

Does he originate individual enterprises?

Does he have many things to do?

Does he use the resources at his command?

Does he go ahead without depending upon teacher or others?

Does he see when he needs help, and does he ask for it?

If he needs help but does not see his need, is he willing to act upon suggestions made by the teacher?

Does he use his special abilities to the full?

Does he make an opportunity to practice his dominant interests?

*Coöperation*

Does he work well with a group?

Does he accept leadership of the group when asked to do so?

Can he be depended upon to follow a leader?

Is he fair in taking turns? in talking? in using tools? in presenting his ideas?

Does he receive and give criticism in a friendly and helpful way?

Does he volunteer to help when he can?

*Work habits*

Does he keep his materials in working order?

Does he plan intelligently?

Does he execute well that which he himself has planned?

Does he judge results in a fair way?

Can he make good use of library, reference reading, shops, etc.?

Is he handicapped by a lack of fundamental skills?
Does he think clearly?
Does he stick to a job until it reaches a satisfactory completion?
Is he prompt in performing all his duties?
Does he judge waste properly?
Does he know and care whether he has reached his best standard?

*Consideration of others*

Is he consciously sympathetic in his understanding of other people?
Does he respect differences in opinion on various issues?
Is he thoughtful of classmates? of parents? of teachers? of visitors?
Has he definite standards of personal behavior?

*Honesty and trustworthiness*

Does he respect the property rights of others?
Is he doing the best work of which he is capable?
Does he take the blame for his acts?
Does he try to evade deficiencies?
Does he vote for the best-qualified person?

*Personal habits*

Is he punctual?
Is he neat and orderly?
Can he exercise self-control in halls? in elevators? in lunch room? in school bus?
Has he a pleasant, low-toned voice?

*Appreciation*

Does he choose good music? good pictures? good literature? good ideals of conduct?

*Health habits*

Does he choose his luncheon wisely?
Has he abundant energy and vitality? Does he live on nerve force largely?
Has he good motor coördination?

## SPECIAL CHECKS

Thinking that if traits are to be developed there must be practice of those traits under normal conditions, and knowing that traits are specific, an attempt was made to analyze some of the more intangible outcomes.

### CHECK I

Children are encouraged to bring in exhibits which bear upon what is being studied and to make reports about interesting features of the environment. The rather simple record which is given in Table III came about from checking reports and exhibits which were made during a period of twenty days. All the teachers of the elementary school, except one who was ill, participated in the checking. The checking was done in the following form.

### ANALYSIS OF OUTCOMES

### EXHIBITS AND REPORTS

(Materials, books, clippings, pictures)

Check in the appropriate column each time a pupil brings in an exhibit or makes a report. A red check means that the report or exhibit was made in response to a direct assignment by the teacher.

Make no attempt at evaluating the reports or exhibits. They should have to do with class activities or special interests. Reports which have to do with council, assembly, bank, or other special topics relating to whole school affairs are not to be included on this sheet.

GRADE ______________

| PUPILS' NAMES | MON. | TUES. | WED. | THURS. | FRI. | MON. | TUES. | WED. | THURS. | FRI. |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | | | | | | |
| | | | | | | | | | | |

TABLE III. EXHIBITS AND REPORTS MADE BY PUPILS IN THE ELEMENTARY SCHOOL DURING A PERIOD OF TWENTY DAYS, AND THE NUMBER OF DIFFERENT PUPILS WHO CONTRIBUTED

| GRADE | NUMBER OF CLASSES | TOTAL ENROLL-MENT | VOLUNTARY REPORTS AND EXHIBITS | ASSIGNED REPORTS AND EXHIBITS | DIFFERENT PUPILS WHO CONTRIBUTED |
|---|---|---|---|---|---|
| I . . . . . | 2 | 35 | 103 | 24 | 28 |
| II . . . . . | 2 | 37 | 109 | | 33 |
| III . . . . . | 2 | 42 | 109 | 8 | 32 |
| IV . . . . . | 2 | 49 | 124 | 50 | 44 |
| V . . . . . | 1 | 20 | 25 | 21 | 15 |
| VI . . . . . | 2 | 35 | 97 | 36 | 26 |

The significant parts of this table are the large number of reports and exhibits which were made and the large proportion of pupils who took part.

## CHECK II

Another check was made to find how often the life of the whole school was definitely being considered in the different classes. The checks were made by the teachers in forms similar to the one shown below, and the results were tabulated and can be found in Table IV.

### ANALYSIS OF OUTCOMES

### CLASS CONSIDERATION OF THE MATTERS RELATING TO THE WHOLE SCHOOL

This includes reports given by one member of the class to the group or a report made by a member of another grade to the group. (Assemblies, council, lunch room, bus, hall, exhibit cases, bazaar, library, and lavatory.)

Under appropriate dates list the items which were up for consideration. Under the heading "Groups Affected" tell whether two or more grades or the whole school were involved in the affair. Use "W" to mean whole school and the numbers "2" etc. to show how many classes were involved. Under the heading "Something Done" check items about which definite action was taken at the time.

| Date | Items under Consideration | Groups Affected | Something Done |
|---|---|---|---|
| Monday | | | |
| Tuesday | | | |

Table IV. Numbers of Items of Interest to the Whole School considered in the Different Grades

| Grade | Number of Items Considered | Groups Affected | | Number of Cases of Something Done | Number of Classes Concerned |
|---|---|---|---|---|---|
| | | Whole School | Two Classes | | |
| I . . . . | 1 | | 1 | 1 | 2 |
| II . . . . | 2 | 2 | | | 2 |
| III . . . . | 27 | 20 | 3 | 12 | 2 |
| IV . . . . | 44 | 35 | 4 | 42 | 2 |
| V . . . . | 8 | 6 | 2 | 7 | 1 |
| VI . . . . | 8 | 8 | | 8 | 1 |

## CHECK III

In order to find out how independent in their method of work the fourth-grade pupils may become, forty pupils in that grade were asked to write as follows:

There are many questions which you cannot answer. Tell as many ways as you can that you might use in helping to answer questions. Think of ways you have used as well as ways you might use. Do not give up until you have thought of all the ways you know. The game is to see who can think of the most.

If you can't spell the words you want, just try them. You can get some parts of them, and I shall know what you mean. Do not ask how to spell words. That will give the game away.

The fourth grade in question was divided into two classes. The teacher of each class gave to each of the pupils a mimeographed sheet of paper containing the directions. Questions were not asked. Pupils wrote as long as they wished. The time used was not over fifteen minutes in either group. The answers, made into a composite list, are given without any interpretation of what teaching technique might have caused them.

Answers were as follows:

| | | |
|---|---|---|
| Read in books | | 33 |
| Geography | 6 | |
| Reference | 4 | |
| Library | 23 | |
| Ask person who knows | | 17 |
| Look in the dictionary | | 11 |
| Look in other books | | 8 |
| Encyclopedia | 6 | |
| Atlas | 1 | |
| World Almanac | 1 | |
| Go to see | | 7 |
| Think your question over carefully | | 6 |
| Go on trips | | 4 |
| Test for yourself | | 3 |
| Write to some company | | 2 |
| Look on products map | | 2 |
| Stick to it until you get an answer | | 2 |
| Prove it | | 1 |
| Look at pictures | | 1 |
| Practice and find out | | 1 |
| Use the microscope | | 1 |
| Ask the teacher | | 1 |
| Watch to see | | 1 |

Twenty-one different responses were made. The total number of responses by all pupils was one hundred and one. The accompanying tabulation shows how many responses were made by each of the forty pupils.

| Number of Responses | Number of Pupils |
|---|---|
| 9 | 1 |
| 7 | 1 |
| 6 | 2 |
| 5 | 2 |
| 4 | 5 |
| 3 | 9 |
| 2 | 6 |
| 1 | 5 |
| 0 | 9 |

The fact that nine pupils made no responses or irrelevant responses was due to a misunderstanding of what was wanted.

The groups of answers written by two of the pupils are given here:

I. 1. Look in a geography.
   2. Go to the library.
   3. Look in the dictionary.
   4. Ask someone who you think will know.
   5. Find out on the map.
   6. Go to a certain company and get folders.

II. 1. Use the encyclopedia.
   2. Look up in any book.
   3. Ask somebody if he knows.
   4. Try it yourself, not looking in any book or asking anybody.

From this study the conclusion is drawn that pupils may be practically independent in their method of attack if the social situation is so set up that suggestions may be freely exchanged as to what is the way to find out answers to questions. This group of pupils suggested most of the ways which any good workman would use.

## CHECK IV

### ROOM JOBS AND COMMITTEES

In each classroom there is the constant effort on the part of the teacher to provide situations in which very real responsibilities arise. Pupils recognize what is necessary to be done and accept the responsibilities. In a fifth-grade class the following offices were filled by individuals or by committees during the year:

Manager of Bank
Lunch Committee
Assembly Committee
Bulletin-Board Committee
Guard of Bank
Absentee Committee
Indian-Study Committee
White-Rat Committee
Secretary of Room Council
Show-Case Committee
Assistant Clerk
Inspection-of-Desks Committee
Alligator Committee
Clerk of Bank
Cloakroom Committee
Treasurer of Lincoln Nature Corporation
Canaries Committee
Checking-up-Jobs Committee
Assistant Paying Teller
Secretary of Lincoln Nature Corporation
Assistant Bank Manager
Bookkeeper Committee
Vice President of the Bank

Guinea-Pig Committee
Creative-Work-Period Committee
File Committee
Room Secretary
President and Room Council

The names alone suggest the character of the duties which would be performed. A very significant committee was the one on "checking up jobs." This committee prepared a chart of all the room jobs and committees and checked regularly each day to see that the duties began to be properly performed. When a pupil or committee proved its efficiency it was no longer checked.

There is need for further trial and further development of such techniques as have just been described. It is through them that the value for character education of certain types of curricula will be demonstrated.

Through such specific checks as the few we have given, and through constant insistence that it is the opportunity for practice of desirable traits which is most needed and which is best supplied through some type of work that allows the one to be educated to be most active, at least a chance to demonstrate its value will be accorded to our work and to other work similar to it.

## OUTCOMES IN CREATIVENESS

It seems too bad to use the word "creativeness" apart from the discussion of skills, information, and habits; but as we go among the classrooms and in the halls we find evidences of a joyousness, of a blossoming forth into literature and music and other arts which needs particular comment. These are valuable outcomes which we cannot classify otherwise than to say that they seem "creative." Numerous illustrations in this book give evidence of it. Every child writes and paints and constructs. Most of the pupils at one time or another want to make a song or sing one. Perhaps this verbatim record of parts of the assembly program given by the third grade when it had ended its study of China will show that the children have many opportunities to be creative, that they use the expert assistance of special teachers who are available, and that they do create. Cooking, sewing, building, painting, making rhymes, reading, seeing beautiful things, understanding another civilization, all are reported in childish simplicity. Through each of them the child has freed his creative energy.

### ASSEMBLY, MARCH 10, 1926

#### THIRD GRADE

[PAULINE] After we got to studying China we thought it would be very nice to have costumes in our class and so one girl brought a costume from home. We thought it would be nice to make a costume ourselves and the first thing we did was to make our patterns the way we thought a costume would be like. Here are some of them. We then chose the best one and we cut the pattern as near like this one as possible. We cut the material out and then had the costumes sewed on the machine at home. Another girl in our class brought these shoes. You know the Chinese used to bind their feet, but they do not any more, but they still want their feet to look small. Here are some Chinese shoes. They put these [pointing to the short soles] under their shoes to make them look small. When they used to bind their feet they could wear shoes as small as these. Here are some shoes which we think belong to a rich little girl for they are made of real leather. Not all shoes are made of leather, and the reason why is because there are not many animals in China and, of course, the poor cannot have leather shoes. This is another costume which a first-grade child brought to us, but it is too small for us to wear.

GIVING AN ASSEMBLY PROGRAM ON CHINA

The third-grade pupils show the kinds of work which they have done

Another child in our class brought this. It is a mandarin costume. Then another child brought this costume. It is a man's costume, but it has a skirt.

[Bartlett] We got interested in the study of China and we thought we would make a house. And so we did. We did not make it exactly like it because the Chinese have bells on their roofs and we didn't have any. They do not have glass windows. Their windows are made of paper. Their beds are just little low platforms of bricks and they have fire underneath. Then we made a garden. It had a pond and a bridge over it. Then we made a tea house and put it in the garden. This is the tea house we made. We made a few trees and flowers. Here is one tree and here are some flowers. The Chinese gave us a few of our flowers. They gave us the peach, the cherry, and the chrysanthemum. Then we made a spirit wall. There is a wall around the garden and then it has a little wall that is back farther. This wall is built crooked so the spirits cannot come in. They cannot go crooked. If they went straight they could bump into the wall. Then we made a little archway over the wall. It looks like a little house over it. They always keep their cats chained but they let the dogs loose, because they want the cats to catch rats in the night. If they let them loose somebody might steal them to catch their rats.

[Jerrold] Miss P— said that we could go to the Metropolitan Museum and we saw some scrolls. I asked Miss P— what one thing was and she said it was a scroll. She said that the Chinese have scrolls instead of pictures because they like to roll them up and get some other pictures. Here are some of the scrolls we made for our house. Here is one we made. Here is another.

[Katharine] We went to the Museum and saw grotesque figures, and we made some. Here is one we made out of clay. Here are some pictures we made. Frances made this one, Jerrold made this. I think Marion made this one. Henry made this.

[JANET] Katharine brought this book of Chinese Mother Goose Rhymes, and we thought it would be nice if we could make some Mother Goose rhymes and so I am going to read you a few of them.

After a rainstorm many people lose their shoes and so many poor people go out to look for them. Here is a little rhyme about that.

### AFTER A RAINSTORM

After a storm the poor children go
To find some sandals, don't you know,
For many people lose a lot.
That day the children never forgot.

[FRANKLIN]

Our little fat brother,
His cheeks are pink,
And he is nicer
  Than any other.
Go to sleep brother,
  Little eyes wink.

[MARION]

When I was a little boy
I had a lot of fun.
I used to play with another little boy
And run, run, run.

[HENRY]

O come, little brother,
O come, little brother,
O come, little brother, and see.
O come, little brother,
O come, little brother,
O come, little brother, to me.

[ARTHUR]

# CHAPTER VIII

## THE PLACE OF SPECIAL TEACHERS

If it were possible every elementary-school teacher ought to do all the work with her class. That would contribute to less division of interest and attitudes on the part of the pupils, to more consistent and orderly growth, to better understanding of meanings; in short, to the more symmetrical development of the child. But that would mean being skilled in music, in fine arts, in industrial arts, in French, perhaps, and in physical education, as well as in all the regular subjects of study. Few teachers have any such accomplishments.

The best substitute for having the teacher do all the work with the class is to have her be responsible for making the program into which the special teacher will fit. She is the unifying agency. The basis of the curriculum is a unit within which one uses reading, history, music, fine arts, and science. Just as subject-matter lines in language, grammar, spelling, reading, arithmetic, geography, and history break down rather largely in the curriculum which is built upon units of work or centers of interest, so lines of demarcation in fine arts, in industrial arts, and in other special subjects disappear. We have been amused when pupils who have used the library often during the day in searching for information reported at home that they had had no reading at school that day. Even visiting teachers, who have heard a discussion of a trip, who have seen the trip traced on the floor (which is laid off into streets and city places), and who have watched pupils make sketches for pictures to illustrate the trip, have been known to say that the class had no language, no geography, and no fine arts. The old terms are fixed. Too many people must have reading labeled "reading."

In many instances in Chapter V the place of special teachers can be studied. Their work falls into three inseparable divisions. They help round out the curriculum which the grade teacher is evolving with her class. This is the significant new departure for them. Then they see to it that necessary skills and essential growth from one level to the next in their particular field of work are not neglected. This was what they did almost exclusively under the required course of study organization. Only occasional periods of drill are now required to secure all the skill which is needed in industrial arts or in fine arts. The third phase of their work is to develop appreciation. That comes from the other two parts of their work and is well done if those are well done.

We are not sure that we have as yet secured the best adjustments between the uses of the special teachers and the classroom teachers. The work here presented, however, does represent our present practice, from which better results may be developed.

The time which the special teacher gives to any classroom varies with the need for her advice or other assistance and with the time which she has.

## French

French has been given as a special subject and has been unrelated in most cases to any other work of the class. The French classes have had four twenty-five-minute periods weekly in the fourth, fifth, and sixth grades.

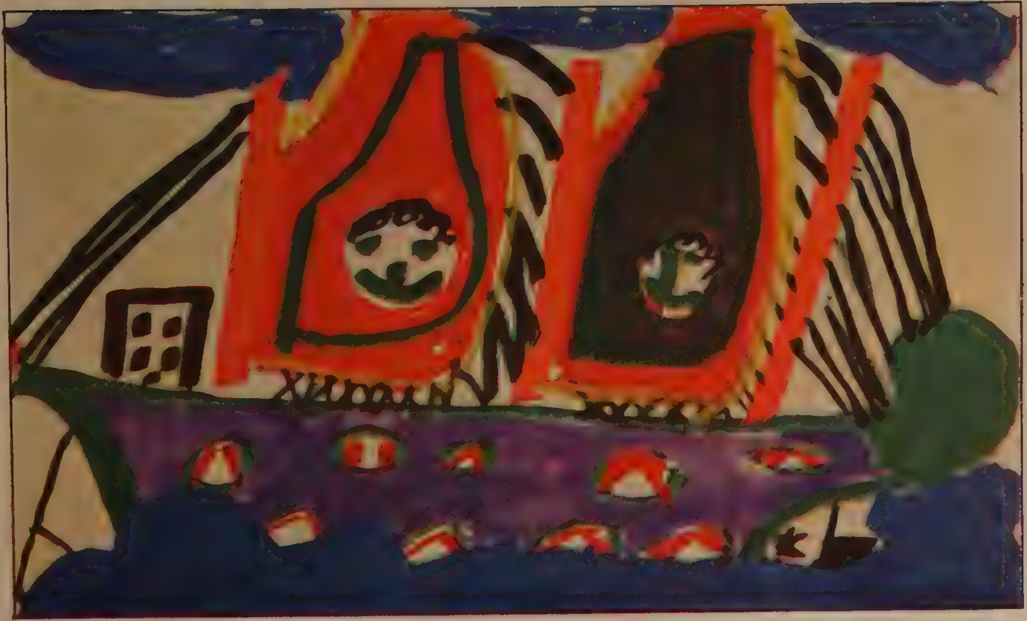
## PHYSICAL EDUCATION

Physical education has had five thirty-minute periods weekly in all classes except the first, and there free play has taken the place of the regular class periods. Often the physical-education teacher does contribute to some unit of work. For example, the pupils who are doing the Farm unit in the first grade become farm animals in the gymnasium by imitating the characteristic movements and rhythms of the duck, the rooster, or the galloping horse; and when the fifth-grade pupils are studying water transportation they are taught some sailor dances by the physical-education instructor.

For the most part, however, physical education has been unrelated to any classroom activity. It has served its own end. The same spirit of pupil participation has characterized the work in the gymnasium or playground as in the classroom. Pupils have helped choose; they have formulated rules for the games; they have judged what was real sportsmanship; they have had a share in the responsibilities of the physical-education period. The outcomes in habits and attitudes from that period have been those which the underlying philosophy would demand.

## MUSIC

The work in music has been much less separate from the life within the classroom than has French or even physical education. Often for a long period of time the music periods in a class have been devoted to making words and tunes or singing songs which are needed for a play or an assembly program growing out of some central activity. The second-grade wheat play (pp. 106–111) is an example. Of course children do not sing only the songs



THE PIRATE BOAT

Free painting by a second-grade boy

they have made. They learn songs which the music teacher suggests. These songs are learned and practiced for use on special occasions such as Thanksgiving, Christmas, or the spring festival. A sampling of what songs are used is found in the accompanying Christmas program given by the elementary school with the assistance of some German classes in the high school.

### Program

December 18, 1925

*Songs*

| | |
|---|---|
| Here We Come a-Caroling | Grades 2–6 |
| O Come, Little Children | Grades 2–6 |
| When Jesus was a Little Boy (text by pupils, with music by E. V. Prahl) | Grades 1–2 |
| I See it in the Snowflakes (text by pupils with music by E. V. Prahl) | Grade 3 |
| Bergers et Vous, Bergères | Grade 4 |
| Il est né | Grade 5 |
| Hark ! the Herald Angels Sing | Grades 5–6 |
| St. Nicholas | Grades 1–6 |

*Rhythms*

| | |
|---|---|
| Snow Fairies | Grade 1, class 1 |
| Snow Man | Grade 6 |
| A Christmas Story | Grade 5 |
| Christmas Toys | Grade 2, class 1 |
| A Train | Grade 1, class 2 |
| A Dutch Windmill | Grade 3, class 1 |
| A Christmas Story | Grade 2, class 2 |
| Santa's Bag | Grade 3, class 2 |
| A German Dance | High-school classes |
| German Songs | High-school classes |

[The program was given in the girls' gymnasium]

In the special periods set aside for music (the number ranges from two to four twenty-minute periods weekly) there has been formal instruction in musical notation, in voice placing and control, and in writing music. This phase of the work has been considered less important than singing for pleasure.

The experiment in Creative Music is reported in the next chapter. Experiments have proved that the opportunities for musical education may be greatly increased through the use of the kind of music which children can make.

## THE INDUSTRIAL ARTS AND THEIR RELATION TO THE ELEMENTARY-SCHOOL CURRICULUM

The industrial arts represent those phases of the activity which give the pupils a better understanding of their relationships with the industrial materials they constantly use and an appreciation of the industries which make those materials possible. Through the industrial arts pupils gain in an understanding of the products of industry — their uses, the processes required to change them from the raw state to the usable product — and in appreciation of the industries which manufacture them. This content will be concerned with the food we eat, the clothing we wear, the tools we use, the houses we live in, and how we record our activities.

The industrial arts underlie the activity curriculum as they do the activities of life. The phase of elementary education in which they are most prominent contributes valuable factors:

1. It provides tangible, meaningful contact with materials daily used by the pupils by offering many opportunities to use and experiment with them.

2. It utilizes the child's natural desire to manipulate and investigate in order to help interpret ideas directly related to the unit of interest.

3. It helps to organize units of work, with emphasis upon the practical values and meanings.

The industrial arts cannot be effectively treated as a separate subject of study in an especially equipped laboratory. In the first and second grades, for example, it has been impossible to indicate all the industrial arts in the detailed descriptions of units. The interested reader will find upon investigation just how basic the industrial arts are to those units.

The classroom teacher calls upon the special teacher for assistance when needed. Activities which require special equipment are carried on in the most suitable laboratory. Because of the special foods and clothing laboratory and of the special teacher in this department, most of the activities pertaining to foods and to the actual sewing in connection with the clothing studies are carried on in this laboratory with the help of the foods and clothing teacher. A pottery room is provided for the clay work. This is used when the major activity of the class is concerned with clay. The "shop" is equipped to care for all those activities not provided for in the other laboratories. This includes equipment for woodworking, printing, dyeing, painting, metal working, and some science. That teacher is asked to help who can best serve in a particular situation.

The main emphasis of the industrial arts is not the manipulative skills acquired, not the production of finished articles, but the desirable and worth-while content which may be developed through practical class problems that provide for the use of actual materials and stimulate investigation into broader fields.

The character of the work done in the industrial-arts shop or in the classroom has been shown in the detailed descriptions of work, especially for the first two grades, and in analyses of units of work (see pages 71, 75, 89, 141, 154, 173, 216, 236).

## HOUSEHOLD ARTS

A large part of the work in household arts in the first five grades has been based on the simple sciences of everyday life. Opportunity has been given for the handling, weighing, and measuring of materials; simple calculation of cost and quantities have been stressed. Good laboratory habits have been emphasized, and efforts made to establish intelligent standards of work and of personal cleanliness in the handling and care of food.

PRACTICE WORK IN THE KITCHEN LABORATORY

Boys and girls are at work in the kitchen laboratory

Besides the usual assistance rendered in the regular classroom, the following practical work has been given in the kitchen laboratory and the sewing room. Selected examples only are given. More detailed information can be secured from pages 71, 83, 99, 128, 150, 158, 233.

### GRADE I

Apple sauce
Baked apples
Study of vegetables
Vegetable soup
Cream soup
Cranberries (Christmas lesson)
Peanut brittle (Christmas lesson)
Junket (study of milk)
Baked custard (study of milk)
Cottage cheese (study of milk)
Cream of potato soup (study of milk)
Lemon milk sherbet (study of milk)
Mother's party
Marguerites

### GRADE II

Vegetables
Quince jelly
Candy lesson (taffy)
Two corn-bread lessons
Plain muffins
Whole-wheat muffins

### GRADE V

Study of food values
Custards
Eggs and bacon
Cream soups
Vegetables
Sponge cake
Cocoa
One field-trip luncheon

The time which the household-arts teacher gave to each class ranged from sixty to ninety minutes weekly. Teachers used the laboratory at other times and often called for special assistance in working out some household arts problem in the classroom.

In Grade 6 an example of what is often done to prevent any lack in the development of the pupils along apparently essential lines is indicated by the work which was done in household arts. One ninety-minute period a week was given to definite instruction (Florence Winchell's "Food Facts for Every Day" was used as a textbook). Since the boys after leaving this grade had no regular period for household-arts study, their particular needs were kept in mind.

A more thorough study of the cost of food, the composition of food, and its uses in the body was undertaken. Special study was made of the daily food requirement, and daily records of food habits were kept at the beginning of the year and checked against records made at later dates.

In general the work was especially planned with the idea of further establishing intelligent standards and a scientific background for the choice of food from the lunch-room counter. Lunches chosen at the counter were carefully supervised and criticized by the instructor and the pupils.

The study of the box luncheon also formed a part of the work. Field trips, made in connection with their regular classroom work, afforded the opportunity for the use of the box luncheon.

More attention than previously given in earlier grades was given to the duties and responsibilities of host and hostess. Every possible occasion was taken advantage of in order to afford the pupils an opportunity in the practicing of these duties and responsibilities. Excursions and field trips during the year included trips to neighborhood groceries and markets.

The first lessons were devoted to the preparation of a few simple dishes, such as cocoa, toast, vegetables, etc. and were followed by the more difficult in preparation, such as eggs and egg combinations, simple desserts, salad, quick breads and cake, meats and meat substitutes, cream soups and their accompaniments, cookies, candies (Christmas), cereals, and dried fruits.

Four luncheons were served. Other groups of pupils or teachers and parents were invited as guests. All the luncheons were planned and marketed for individually or in groups by the pupils. A careful study was made of the total cost and the cost per capita, records being made and kept by the class.

## Fine Arts

The fine-arts teacher is usually available for two periods weekly in each class. The time varies as the needs of the class. The work of the fine-arts teacher is in helping with drawings and paintings which illustrate the unit of work, criticizing free painting work and assisting when asked to do so, and taking care that necessary techniques are not overlooked.

Any extended discussion would not be justified here after so many references to the fine-arts work in our detailed descriptions (see pages 71, 85, 105, 125, 141, 154, 168, 173, 177, 214, 230). The following list of work which the fine-arts teacher did in certain classes is also suggestive of the general quality and quantity of the work.

## OUTLINE OF FINE-ARTS WORK IN SOME CLASSES

(The classes have been chosen at random)

### Grade I

*Painting*

- At first these small children had great difficulty in handling brushes and paints. An effort was made to improve technique
- Subjects of paintings illustrated trips and other activities
- They were
  - Bridges and boats
  - Automobiles
  - Farm life
  - Illustrations for songs
  - Individual experiences
  - Map of the farm and village
  - Springtime

*Design*

- Covers for farm books
  - Painted in tempera on heavy boards
- Christmas cards
  - Tempera paints
  - Cut paper
- Plate designs
  - Painted with water colors

*Clay*

- All sorts of farm animals, poultry, and people
- Individual work: bowls, animals, boats, lighthouses
  - The best of these were fired and glazed

*Illustrative material*

- Large line-drawings of animals and poultry
- Simple paintings of vegetables
- Japanese brush drawings
- Children's books with simple, clear-cut illustrations
- Farm people in a Polish frieze

### GRADE VI

- Unit of study, "How Man Has Told and Recorded Time." In connection with it the following problems were carried out
  - Printing four large record charts made by groups of different pupils
    - Practice in printing on squared paper with lettering pens and India ink
    - Printing sundial inscriptions on colored paper 6 × 9
  - Pictures illustrating the development of timekeeping instruments:
    - Charcoal drawings for space-filling and form on bogus paper 20 × 30
    - These drawings painted with tempera, to emphasize arrangement of values and selection and arrangement of harmonizing colors
  - Sundial designs
    - Abstract design in large circles for spacing, repetition, some printing (dark and light), charcoal and tempera paint on bogus paper
  - Designs for sixth-grade magazine, *The Gnomon*
    - The best was selected, cut in linoleum by the owner, and printed by a group of four or five pupils. Thirty covers were made, for each of three different issues
  - Printing of labels for the Time-unit exhibit
    - One large sign; other small, individual cards
- The following lessons were based on interests of children outside of the Time unit
  - Christmas cards
    - Individual linoleum blocks
    - Printed on Japanese paper (each pupil made at least twelve)
  - A picture 12 × 18 on bogus paper
    - Individual subjects in three values, inspired by ninth-grade work
  - Sketching of animals at Bronx Park
    - The more talented children made from six to eighteen sketches of different animals
  - Memory drawings of animals at the Zoo

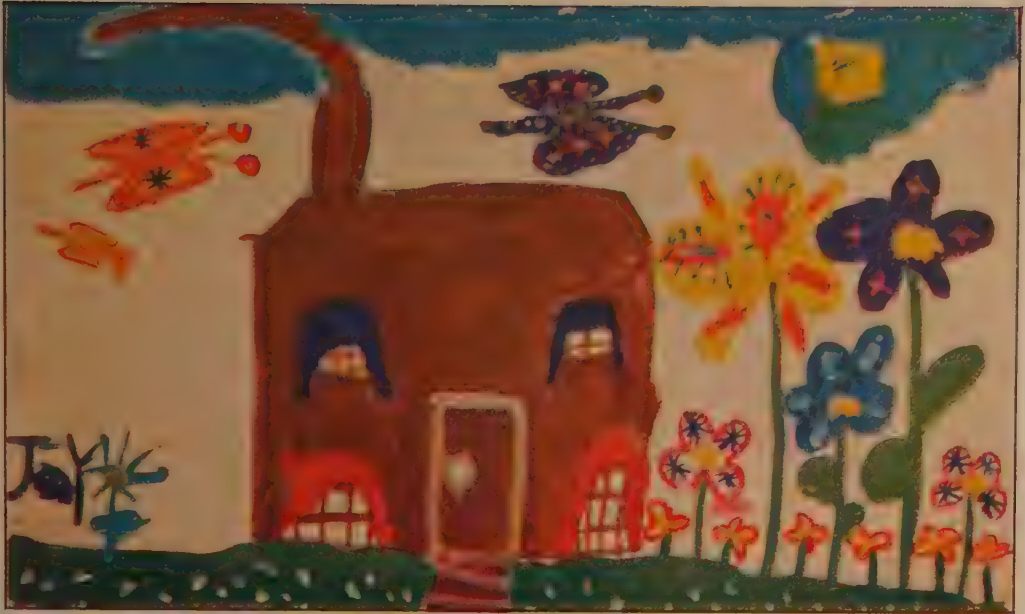
*Illustrative material*

Pages of good lettering
Pictures of "The Evolution of the Book"
Pictures of murals by Puvis de Chavannes
Pictures and books of ancient people
Designs by American Indians

Appreciations are built in connection with good work which is done. The pupils who made the study of China appreciated the beauty of Chinese fabrics, of scrolls, and modeled figures. Designs and quality of textiles mean much when the textiles themselves have been studied as a part of some larger unit. There are almost no lessons which have appreciation as their primary object. Appreciation is never neglected, but it comes as a part of what the pupil does.

### THE CLASSROOM TEACHER A SPECIAL TEACHER

What is done if no poetry, no great stories, no history, no science, are needed in the development of units of work? One criterion says that units must be rich in a cultural background of art, literature, history, and science. If, however, a class of children is not reading good poetry, the teacher in the fourth grade, for example, may set aside a half hour daily for a time in order to let them enjoy the poems in "Rainbow Gold," by Sara Teasdale. They may make poetry booklets in which they include their favorite poems, and some of the poems will be memorized. In a fourth grade, too, great pleasure was manifested by the pupils in a story hour which the teacher originated and directed once a week. Good stories by the best writers were read or told. The aim of the teacher was to round out the experiences which the



IN THE COUNTRY

Free painting by a first-grade girl

children were having. It is the same aim which underlies the telling of chivalry stories to a rather unimaginative and unresponsive fifth-grade group, or reading a book of American history with some class whose work had not brought them in contact with it, or a careful study of how maps are made and all the things they tell with a sixth-grade group. Special teachers are on guard to prevent waste or neglect of possibilities. Classroom teachers, too, seek for constant widening of experience.

# CHAPTER IX

## SOME ADDITIONAL EXPERIMENTAL VENTURES

All the work of the elementary division of the Lincoln School is of an experimental nature in that it seeks to develop newer materials for use in the classroom. One important reason for the publication of this book is to allow for wider experimenting with those materials and methods which seem acceptable. Even the use of the information and skill materials which have been organized in books and used in schools have been fitted experimentally into new arrangements in our school. There has been no thought that all the school work which went before was useless, but in developing newer curricular materials the subjects of study have found with us a widely different use and the teaching of them a different method.

### INDIVIDUAL PRACTICE MATERIALS IN ARITHMETIC

It has been expected that pupils would learn to read, to use numbers, to write, and to spell. We have wanted the need for these skills to be evident to the pupils. When the need arose we have felt that each child should progress at his own rate through the use of individual practice materials.

One type of experimenting which has gone along with the other curricular developments has been with individual practice materials. The work in arithmetic is most characteristic.

The chief effort in the earliest grades of the school in so far as number work is concerned has been to give number meaning, to make the child meet numbers in many situations and come to desire to gain skill in manipulating figures. Once such desire for skill has arisen, the time for individual practice material comes.

A group of teachers interested themselves in developing a series of practice materials which should proceed according to steps of difficulty in the processes and which should be accompanied by self-teaching sections.

After preliminary work by several teachers in preparing a rather large number of informal drill sheets, an arithmetic committee undertook the analysis of the different arithmetical processes and the assembling of carefully graded practice sheets. In making the analyses the best current opinion was used, and much experimenting with the practice sheets preceded their inclusion in books for further trial.

The books were called "The Lincoln School Individual Practice Materials in Arithmetic," and in the first experimental edition were tried out in as many kinds of situations as possible. There were three different methods of check-up employed as means of getting suggestions for the revision of the material.

First, the material was used in conjunction with the grade teachers in some of the grades of the Lincoln School by one of the members of the committee who prepared the material. The committee member and the grade teacher, working always together, were able to pick up a great many of the points on which the committee's judgment had erred. The important element of this phase of the check-up was that there were always two people observing every situation: the one, the teacher who knew and understood children thoroughly and so could evaluate their actions; the other, a person who knew and understood the material thoroughly and so could evaluate the results.

The committee was anxious to get a public-school check-up on the material and therefore secured the coöperation of one of the suburban school systems. The agreement was that the committee would furnish the books and that the public school would use them under its direction and supervision. The same member of the arithmetic committee directed this part of the program. She had group conferences with all the grade teachers and principals, she visited each classroom once a week for the first four weeks and then once every two weeks for the remainder of the year, and she had individual conferences with the teachers every two weeks. Out of each of these methods of contact — group conferences, classroom observations, and individual conferences — grew some suggestions for revision.

In order to get a more widespread criticism of the materials the committee made contact with eighteen school systems throughout the country (ranging in location from New York to California) that were willing to coöperate. The material was sent to them with only a few suggestions as to its use, and they applied it according to their own needs and devices. At the end of the year each teacher who had used the book was asked to fill out a questionnaire relating to various points in question. Each one was also asked to return the individual record sheet of each child. From these it was possible to get a crude measure of the general progress as a result of the use of the material. The element of personal opinion entered into each, but from all of them the committee acquired many suggestions. Each gave a different kind of information, but all were invaluable in preparing the revision of the material. There are books of practice sheets on basic facts in arithmetic now ready for final publication.

## TRIAL OF A UNIT OF WORK

Another type of experiment is to have units of work tried out under different conditions. It has been possible in that way to find whether newer curricular material was suitable for the public schools. Much of the material which has been developed at the Lincoln School has been tried out in other places, but as yet we have definite results from only a few such trials.

In the fourth grade it seemed that Toys and Toy-Making might furnish a valuable unit of work. Material was assembled, and adaptations of magazine articles and chapters in books were made so that there might be suitable reference matter which pupils could use. A mimeographed booklet of the adaptations was made and called "Toys and Toy-Making." Its chapters were as follows:

### TOYS AND TOY-MAKING

I. Introduction: Fun in Making Toys and a New Idea
II. Toy-Making in the United States
    The Toy-Makers of Tryon
    Winchendon, a Toy Town
III. Toy-Making in Germany
    Tin Soldiers
    Toy-Makers of Sonneberg
IV. Dolls of France
V. Wood-Carving in the Austrian Tyrol
VI. Toy Collections and Toys from Other Places
VII. Toys Historically Considered
VIII. Bibliography

The booklet was made during the progress of the unit of work and was given its initial trial along with the first trial of the unit. There seemed possibilities for really educative situations in connection with such a unit; so it was decided to carry it further and to ask public-school teachers to try it out. A letter was formulated which gave the general purpose of the experiment and asked for coöperation. Along with the letter went specific suggestions as to

*How to proceed*

- How to begin trips; collections; the use of the booklet
- Classroom activities to accompany the unit
- Analysis of the unit in terms of subjects of study
  - Reading, composition, arithmetic, geography, history, civics, fine arts, industrial arts, music, science
  - Outcomes to be expected in skills, information, and habits and attitudes
- Use of the reading booklet

The record blanks which were to be filled out were as follows:

I. Give evidences of
  1. Pupil interest in the work; collections made; subjects discussed
  2. Any activities which the pupils themselves initiate
     *a.* Bring in interesting material
     *b.* Make new toys
     *c.* Try experiments
  3. Any self-initiated library work (answering any questions)
  4. Any changes in attitude toward
     *a.* Workers and occupations
     *b.* Appreciation of working conditions
  5. Any special values for motivation of such subjects as arithmetic, composition, geography. Keep records of real problems in arithmetic

TOYS IN AN EXHIBIT CASE

These were collected and arranged by the fourth grade. The following notice was posted on a prominent bulletin board to call the attention of other classes to the exhibit. The invitation was written to arouse enthusiasm for making additions to the toy exhibit.

OUR TOY EXHIBIT

We are collecting toys from all over the world. We have collected toys from France, Germany, Japan, China, Switzerland, Canada, United States, Russia, Czechoslovakia, England, India, Holland, and Belgium. We thought you might come up and see the toys, too. Our toy exhibit is on the second floor. Please see if you have any toy from other countries or any antique toys. We have two antique toys, a little silver chair that is over a hundred years old and came from Belgium and a little wooden soldier, a carving of a great general. The wooden carving that we have is one Napoleon's son played with over a hundred years ago. We want you to help us get some more antique toys. We would like to know how many years old they are.

6. Any widening of experience — better understanding
7. Any evidences of a better functioning of other subjects, as, for example, fine arts
8. Any evidences of the school work carrying over into home activities
9. Pupil-planning
10. Lack of interest, with special emphasis upon what part is uninteresting
11. Overstimulation
12. Please make any other relevant suggestions

II. Keep records

1. Total extent of time given to the topic
2. Amount of time given daily and also amount of time given to other school work
3. Reading difficulties in the material
4. Whether the booklet answers pupil's questions
5. Place and time of using the material provided
6. Any special interest in the material
7. Trips taken
8. Collections made
9. List concepts that were cleared up
10. At the end of the study please mail to us
    - *a.* Your own copy of the reading booklet with any annotation you care to make
    - *b.* Any written material you have as an outcome of the study
    - *c.* Drawings
    - *d.* Any other school work which you think would help in revising the material

The work was tried out in a fourth grade in a public-school class and in a fourth grade in a normal-school practice class. A Lincoln School teacher also tried the material in a fourth grade. Their reports at the end of the study were complete and in every case favorable to the unit of work as valuable for the fourth grade. Not all the suggestions had been carried out, but many others equally valuable and based upon local conditions had been substituted.

It is necessary in connection with units of work to make a bibliography of suitable reading for the grade. In some cases, as in the Toy unit, there is a great lack of reading material which an elementary-school class can use. New books need to be made which supply the content material for the unit. The reading booklet which was made in this case was meant to do that. The booklet was mimeographed and sent out in that form. It is at present being revised in the light of criticisms offered by the teachers who have used it and of later thinking about the most satisfactory arrangement and development of its chapters.

A final trial of the unit this year convinces us of its value in the fourth grade. Any further analysis of the results obtained by any of the teachers who have tried the unit would result only in duplicating the original suggestions with variations necessitated by local conditions and teacher personality.

### THE CREATIVE-MUSIC EXPERIMENT

Often there are special kinds of experiments which need to be carried on and which only a school such as the Lincoln School would be able to undertake. The practicability of the experiment may be called in question in its initial stages. It may require specially trained teachers and highly selected equipment. This was true of the Creative Music experiment.

The work has been tried for eight years in the Lincoln School and is now being prepared for trials in public schools. Teacher-training courses have been given at Teachers College, Columbia University, in preparation for these extended trials. A series of books to be used by the children will soon be off the press.

The experiment had been tried first in the private studio of its originator. The Lincoln School gave an opportunity to extend it and to try it under conditions which would more nearly approach the ideal which had been set — the use of this type of music in public schools.

In discussing the work the teacher says:

> Perhaps our most radical departure from the accustomed way of music teaching has been in the making of musical instruments by the school children. All the children who are old enough to use the necessary tools are initiated into the secrets of instrument making, according to their ability and interests. The younger children make drums, rattles, tambourines, pipes-of-pan, and trumpets; the older ones make the more difficult violins, cellos, and flutes; while those between the two extremes make many kinds of simple wind, stringed, and percussion instruments of varying degrees of difficulty. In the course of a few years many of the children have lived through all the high spots in the historical development of musical instruments and have made and played all the simple kinds from tom-tom and one-stringed gora to violins.
>
> The children have adopted simple means to serve their musical ends, and have made their instruments out of whatever they could find — cigar boxes, pieces of dry lumber, gourds, butter tubs, cheese boxes, tortoise shells, hollow reeds, bottles, paper — just as primitive man made his instruments from whatever was at hand. All the children in any one grade have worked on the various enterprises, and no child has been left out from lack of musical ability.
>
> The making of musical instruments offers a natural stimulus for exploration in music and stimulates investigation in many other fields, such as art, history, science, and construction.

CREATIVE MUSIC

The fourth-grade pupils made drums and rattles and accompanied the fifth-grade and sixth-grade pupils, who sang an Indian song at an assembly

> Our experiments in the use of these simple instruments have been not only interesting but also gratifying. By means of them we are able to give children a freedom and ease of self-expression which would be impossible where technical differences are met. We have been able to defer all the difficult phases of technical training until after the children have had wide experience in music and know how to choose intelligently the instruments which will be most congenial to them. We have been able to take each child where he is and let him grow from that point, instead of superimposing upon him an adult point of view. All the children in our classes have played with satisfaction; improvised and composed deliberately; played in class orchestras and in larger orchestral combinations, not only their own compositions but folk-melodies and themes from the classics. — *The New Era*, January, 1927

Teachers of varying degrees in musical ability and musical training have used the materials. Plans for wider experimenting under public-school conditions are under way. Along with this wider experimenting will go the continued preparation of books of reference and of method for the class work.

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## The Creative-Work Period

### AN ADDITION TO THE PROGRAM OF WORK

Still another type of experiment is concerned with placing in the program time for doing individual creative work. For three and a half years now the school has used Thursday afternoons to give the pupils in the fourth, fifth, and sixth grades an opportunity to carry on more of the individual work for which they have not had time during the regular work of the day, even though each teacher has set apart individual work periods in her daily program.

For two years boys and girls in the fifth and sixth grades had been requesting permission to go to the shop at noon, after school, or between classes. They had tried to make appointments so that the fine-arts teacher, the industrial-arts teacher, or someone else could give them help on some piece of work they especially desired to do. Repeatedly came such requests as "When may we cook?" "When may I work on my bowl?" or "May I finish my table at noon?" Plays started seemed never to find enough time to be written and acted. It was clear that the children had many more worthy purposes than time in which to carry them out.

After attempting to provide, more or less successfully, for numerous individual requests it was decided to see what could be done toward making it possible for all children who desired it to have extra help and time for painting, drawing, writing, singing, modeling, or experimenting. The difficulty of finding a time when all the laboratories and all the teachers of special subjects were free was so great that the idea was abandoned for the year. The next year the requests continued to come.

Another attempt was made and a time was found when all the teachers, including those of special subjects, could be free. This much ascertained, a class was asked the question "How many of you have in mind some special plan you would like to carry out in case you could have the time and someone to help you?" With no hesitating on the part of the children "to think up something," hands shot up throughout the class. This proved true in one class after another.

This preliminary question was followed by room conferences where teachers and children together made the necessary plans. The children enumerated things they would like to do: to make something in the shop, to cook in the kitchen, to sew, to paint in the studio, to model in the pottery room, to experiment in the science laboratories, to write plays, to act in the assembly room, to dance, or to sing. The name for the new periods, which were to be one and a half hours in length, one afternoon a week, was chosen with difficulty, for no teacher or child seemed able to suggest one that exactly described the period. "Individual-Work Period" was almost satisfactory, but was discarded, for who would wish to play alone? "Creative-Work Period" was finally chosen, and it was agreed that no one during that period should drill in arithmetic or study a spelling lesson — even if he wished to do so.

The Creative Work period has up to the present occurred from 1:00 to 2:45 every Thursday afternoon for four years. Obviously many changes have developed as the possibilities of the plans have been more fully realized by teachers and pupils.

Some of the implications of doubt as to the success of the period are evidenced in the following questions, some of which have been asked by visitors, some by members of the staff, and some by the children themselves:

1. Is this a time when a child does just what he pleases?
2. May he start a new piece of work each week?
3. Since the teacher is present only in an advisory capacity, will there not be many children who will do inferior work because their standards are poor or because they are easily satisfied?
4. Are there not children who do not have real purposes? What do *they* do?
5. How can fourth-grade children work with sixth-grade children on a radio set?
6. How can a cooking teacher handle twenty children from the fourth, fifth, and sixth grades — all wanting to cook something different?

Frequent staff discussions clarified our ideas as to the principles underlying this work, as did also pupil discussions regarding ways in which to make it possible that the good ends could be realized and the harmful ones averted. It may be helpful just here to attempt to answer the questions in so far as answers have been reached.

1. *Is this a time when a child does just what he pleases?* The answer is Yes and No. One of the lacks in present-day schools is self-initiated plans. Granted that the children have ideas and plans of their own, there is a dearth of time when they can carry them out. Before the Creative Work period went into effect the pupils themselves said that everyone ought to come on that afternoon with a plan and that he ought to finish whatever he started. Very soon it was found that the plans invariably consisted of "I want to cook," "I want to work in the shop," "I want to write a play," "I want to work in the pottery room," "I want to paint." These simple statements were accepted temporarily in lieu of a plan. Because materials

were necessary, and the size of the group important for the adviser (the teacher), it was necessary to have the children designate, on the Tuesday preceding, the work they wished to do on Thursday. In this way it was possible to prevent twenty-five children from going to cooking when only eighteen could be cared for, or ten from going into the radio group when only eight could work profitably. In cases where the numbers could not be cared for, the children signing up could be interviewed and the extra ones given an opportunity to sign for another group. In some cases it was necessary to form duplicate groups.

At the beginning of the second year of the work the above plan was further modified. The procuring of materials as well as the numbers signing for any one group was a difficulty. If materials were not on hand for the chocolate cake that Jane wished to make, or for the rabbit cage that John needed, or for the bank booth for the fifth grade, much time was wasted. As a result a simple work card was evolved. This card is now filled out, and on the preceding Monday is presented in person to the adviser of the group at the fifteen-minute conference period.

This short conference period makes it possible for the adviser to function in another way. He may ask for a more definite plan for the proposed piece of work; he may question the value of a piece of work or the child's reason for making it. He may question the possibility of carrying out a certain piece of work. Joseph, who was new to the school and had done practically no work which involved the handling of tools and wood, was planning to make an elaborate table which would be very difficult to execute. He was advised as to the difficulty, but still

MODELING IN THE POTTERY ROOM

Some fourth-grade, fifth-grade, and sixth-grade pupils, using the pottery room during the Creative Work period wished to make it. He persevered faithfully for eight weeks and finished it, pausing many times to learn difficult techniques.

Billy continued to sign up for cooking. And what did he plan to cook the first day? Fudge! The second week he presented himself at the conference and announced he wished to make fudge. As his first batch of fudge was a success, it was decided that the spending of another hour and a half could not be justified on the ground that he liked the taste of fudge. He was advised to make fudge at home and to plan to cook something else at the next Creative Work period.

Thus the child does "what he pleases" so long as the adviser can justify it as educative and provided that it is within the child's power and within the scope of the materials available.

2. *May he start a new piece of work each week?* At the very first conference of all the classes engaging in the Creative Work period the children themselves suggested that it would be necessary for everyone to understand at the outset that a piece of work once begun should be finished. For the entire four years there has been little difficulty in living up to this agreement except in a very few cases.

The group working in the industrial-arts shop suggested that a chart be kept on which could be entered the child's name, his piece of work, the date on which he began it, and the date on which he finished it. Such a chart has been kept.

In certain kinds of work individuals are contributing to a group product. In such an instance as a play the natural finish was the production of a play for the entire group. In the case of the group wishing to learn photog-

FOR THE BANK BOOTH

These fifth-grade boys made the bank booth. They are shown here using the Creative Work period time to push the work forward raphy the adviser suggested a series of lessons. When this series was completed, those children who had had the privilege of this group signed up for other work. In certain instances boys who had done exceptionally good work were given the privilege of acting as advisers to others.

In some kinds of work it is quite possible to start a new piece of work each week. In an hour and a half of undisturbed work one can plan and make a cake, fudge, cookies, or biscuit. A lump of clay can easily grow into a lovely bowl ready for firing. A marvelous bear may be the product in an even shorter period. Again the urge to make linoleum prints may result in attractive cards in one or two afternoons.

After all is said and done, many of the bugaboos of formal dictated work which is unrelated to the child's interests are simply nonexistent in the Creative Work period. John, James, and Mary finish what they have started, with scarcely an exception, because they are making or doing something that has meaning for them.

3. *Since the teacher is present only in an advisory capacity, will there not be many children who will do inferior work because their standards are poor?* This is a puzzling question, but the puzzle is not in the fact that the teacher is present only in an advisory capacity. In fact, this should be the capacity in which all the teachers are present at all times in all schools. The fact that it is understood by teachers and children alike that the adult (in some cases a high-school student and in two cases an elementary student) is present as an adviser places the emphasis on help asked for when needed. The attitude between helper and helped is wholesome. When advice asked for under these circumstances is given it makes a lasting impression. An eighth-grade boy had been adviser to a

group of sixth-grade boys who were working on individual jobs in the shop. Both the adviser and the boys had experienced great difficulty in regard to orders for wood. This adviser finally hunted up a grown-up and said: "I can't spend fifteen minutes each time a boy wants to make out an order slip showing him how to do it. I wouldn't have any time to help those who want help. What shall I do?" It was suggested that he write out the necessary information and present it to the industrial-arts teacher for criticism. This sheet then went to the mathematics teacher for approval as to form. It was then typed and a copy given to each room teacher, who taught all the children who wished to order lumber in the shop how to calculate and order it.

The puzzling part of the question is brought out by the same boy adviser. "You know," he said one day, "there are three kinds of boys in the shop with me. There are those who know just how to do their work, and they do it without any advice from me. That's all right! Then there are those who don't know much about it but want to learn. I don't have to worry over them, because they ask me. But there are those who don't know but think they know. What to do with them is the puzzle!" And so it is! What to do with the child, or the adult either, whose standards are low is the puzzle. This problem does not exist, however, because of the fact that the teacher is present in an advisory capacity only. The child could have been prevented from making mistakes because of dictation or very close supervision, but this does not guarantee an increased appreciation or a raising of standards. What is done in the case of poor workmanship is to try in every way to show the child the difference between a poor job and a good one and to inspire him to *want* to do better. In an extreme case it is understood that the adviser would refuse to "approve" the piece of poor work. As it actually works out there are more numerous opportunities for real teaching than can be cared for adequately.

4. *Are there not children who do not have real purposes? What do they do?* When the very first plans for the Creative Work period were made they included a very definite provision for the children who would not have plans for work which they themselves initiated and wished to carry out. A certain room was to be set aside for these children, and scarce as advisers were one was to be asked to take charge of this group. It was felt that this adviser would have the hardest job, for this person would need to discover to each his special interests and capacities. And lo! when the time came to go to work, not one child appeared in this group. The room was speedily made use of by the overflow shop group, and the adviser became the helper to those wishing to write verse and plays. And so it has been throughout the entire two years: at no time has there been need for this part of the set-up. This has been true even in the fall, when the Creative Work period went into effect with one class of thirty children entirely new to the period and thirty more entirely new to the school. Children do have plans and purposes of their own.

5. *How can fourth-grade children work with sixth-grade children?* Adults are the only ones to whom such a question seems to occur. The radio group, for example, has fourth-grade and fifth-grade pupils in it and a high-school boy for adviser. Quite naturally each pupil does what he is able to do, and no one questions another's right to be there. In all the other activities the attitude of the chil-

dren is the same. The question of differences in ability, however, is a real problem. This question was so troublesome in the shop that the group was divided into the "advanced" and "less-advanced" groups, the latter group being smaller and having its own adviser.

6. *How can a cooking teacher handle twenty children from the fourth, fifth, and sixth grades, — all wanting to cook something different?* This was one of the most difficult problems to solve. The first year it was thought that it could not be done; but the original idea was held in mind, and gradually ways began to suggest themselves. At first the children agreed to cook the same thing. Later it was found that by having a short conference with each child beforehand as to what he wished to do and advising him on special points, and by having materials and recipes ready, he could proceed with his individual problem.

As a conclusion from our experiment of four years we recommend a period of this sort for trial in other schools. It has the unanimous support of all the pupils who have been concerned in it because of the opportunities it has offered for doing satisfying and worth-while things.

## OTHER EXPERIMENTS

Only samples of experiments bearing upon the curriculum and its content have been given. Experiments in preparing books which will supply suitable content on a particular grade level, in developing practice exercises to make the use of the dictionary more effective, in finding out the best ways to deal with remedial cases in developing a particular skill, or in securing better adjustments to school situations are others which might have been reported. A representative sampling gives a general conception of what has been attempted.

# CHAPTER X

## SOME DETAILS OF ORGANIZATION AND ADMINISTRATION

The curriculum whose making has been described has been worked out by the teachers and the pupils. In the beginning the administrative officers of the school said: "You have a clean slate. See now what of value you can write upon it." What has been written has been described, but it remains to show how the efforts of teachers were made more effective through sympathetic organization and supervision.

### Daily Programs

The daily programs have had to be fixed in some particulars. The use of shops, laboratories, and gymnasiums had to be assigned to definite hours, and the time of special teachers distributed wisely. It has been possible, however, for the classroom teacher and the class to make readjustments at need in even these more fixed parts of the daily program. Special teachers have found time and have been willing to assist the class at other than the scheduled periods. Shops and laboratories have been made available many times when it meant squeezing two or more classes into them. All this shifting of the rather fixed parts of the daily program has been influenced by the desire to satisfy the demands of a curriculum much of which necessarily has to be made on the spot. When the words to a song have been made, it adds zest to the making of the tune if that can be composed at once. The music teacher who can adjust a program to such demands is invaluable. Of course, there are difficulties in making such adjustments, and classroom teacher as well as special teacher or other assistant must use judgment in making requests or granting favors in suiting the time of assistance to the need for it.

As for the parts of the daily program in which special teachers are not concerned, the classroom teacher has felt free to make any shifts which seemed to be called for by the work and the needs of the class. If a longer period was needed for discussion, it was taken and the time was adjusted so that a problem could be carried to a solution without a break. The teacher kept close watch to prevent too long periods being used for one thing.

The programs which are given as illustrations have served as tentative bases for the work of the class. Visitors to a classroom have not always found the scheduled work being carried out. That was because other needs of the class were more insistent. The class helped decide in all such cases.

### DAILY PROGRAM. GRADE I, CLASS 2

| TIME | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY |
|---|---|---|---|---|---|
| 9 : 00<br>10 : 00 | 9:00–10:00 Self-initiated period and block play | | 9:00–9:45 Assembly or reading | 9:00–10:00 Cooking Self-initiated period and block play | 9:00–9:40 Industrial arts |
| 10 : 00<br>11 : 00 | 10:00–10:30 Creative Music | | 9:45–10:30 Industrial arts | 10:00–10:30 Creative Music | 9:40–10:30 Reading |
| | 10:30–11:00 Lunch. Discussions and Stories | | | | |
| 11 : 00<br>12 : 00 | 11:00–11:20 Reading | 11:00–11:30 Industrial | 11:00–11:15 Optional | 11:00–11:20 Reading | 11:00–11:20 Stories |
| | 11:20–11:50 Gymnasium | 11:30–12:15 Yard | 11:15–12:15 Yard blocks | 11:20–11:50 Gymnasium | 11:20–11:50 Gymnasium |
| 12 : 00<br>1 : 00 | 11:50–12:50 Fine arts | 12:15–12:50 Reading | 12:15–12:50 Stories and dramatic play | 11:50–12:15 Reading | 11:50–12:15 Dramatic play |
| | | | | 12:15–12:50 Dramatic play | 12:15–12:50 Fine arts |
| | 12:50–1:00 Getting Ready to go Home | | | | |

Daily Program. Grade IV, Class 1

<table>
<tr><th>Time</th><th>Monday</th><th>Tuesday</th><th>Wednesday</th><th>Thursday</th><th>Friday</th></tr>
<tr><td>9:00</td><td colspan="2">9:00–9:25<br>French</td><td>9:00–9:45<br>Assembly</td><td colspan="2">9:00–9:25<br>French</td></tr>
<tr><td>10:00</td><td>9:30–10:00<br>Creative Music</td><td colspan="3">9:45–10:00<br>Group activities</td><td>9:30–10:00<br>Creative Music</td></tr>
<tr><td>10:00</td><td colspan="5">10:00–10:20<br>Room Responsibilities</td></tr>
<tr><td>11:00</td><td colspan="5">10:20–10:45<br>Gymnasium</td></tr>
<tr><td rowspan="2">11:00<br>12:00</td><td rowspan="2">10:45–11:45<br>Household arts</td><td rowspan="2">10:45–11:45<br>Literature or written work</td><td>10:45–11:15<br>Music</td><td rowspan="2">10:45–11:45<br>Household arts</td><td rowspan="2">10:45–11:45<br>Fine arts</td></tr>
<tr><td>11:15–11:45<br>Household arts</td></tr>
<tr><td>12:00<br>1:00</td><td colspan="5">11:45–1:00<br>Lunch and Recreation</td></tr>
<tr><td>1:00<br>2:00</td><td colspan="3">1:00–1:30<br>Individual study period for tool subjects such as arithmetic and spelling</td><td rowspan="2">1:00–2:45<br>Creative-work period</td><td>1:00–2:00<br>Classroom activities</td></tr>
<tr><td rowspan="2">2:00<br>3:00</td><td colspan="3">1:30–2:45<br>Group discussion followed by individual work connected with the class activities</td><td>2:00–2:30<br>Music</td></tr>
<tr><td colspan="5">2:45–3:00<br>Afternoon Luncheon</td></tr>
</table>

### DAILY PROGRAM. GRADE IV, CLASS 2

| TIME | MONDAY | TUESDAY | WEDNESDAY | THURSDAY | FRIDAY |
|---|---|---|---|---|---|
| 9:00<br>10:00 | 9:00–9:25<br>French | | 9:00–9:45<br>Assembly | 9:00–9:25<br>French | |
| | 9:30–10:00<br>† | 9:30–10:00<br>Creative Music | 9:45–10:00<br>*<br>Household arts | 9:30–10:00<br>Creative Music | 9:30–10:00<br>† |
| 10:00<br>11:00 | 10:00–10:20<br>Recess<br>Preparation for Gymnasium. Announcements | | | | |
| | 10:20–10:45<br>Gymnasium | | | | |
| 11:00<br>12:00 | 10:45–11:45<br>† | 10:45–11:45<br>*<br>Fine arts | 10:45–11:45<br>*<br>Industrial arts | 10:45–11:45<br>*<br>Fine arts | 10:45–11:45<br>*<br>Industrial arts |
| 12:00<br>1:00 | 11:45–1:00<br>Lunch and Recreation | | | | |
| 1:00<br>2:00 | 1:00–1:30<br>† | 1:00–2:45<br>† | 1:00–2:45<br>† | 1:00–2:45<br>Creative-work period | 1:00–1:30<br>† |
| | 1:30–2:00<br>Music | | | | 1:30–2:00<br>Music |
| 2:00<br>3:00 | 2:00–2:45<br>† | | | | 2:00–2:45<br>† |
| | 2:45–3:00 Afternoon Lunch and Dismissal | | | | |

* These subjects are included when needed.

† These periods center around various class activities.

### Daily Program. Grade V, Class 1

| Time | Monday | Tuesday | Wednesday | Thursday | Friday |
|---|---|---|---|---|---|
| 9 : 00<br>10 : 00 | 9:00–9:25<br>Arithmetic | | 9:00–9:45<br>Assembly | 9:00–9:25<br>Arithmetic | |
| | 9:25–9:45<br>French | | | 9:25–9:45<br>French | |
| 10 : 00 | 9:45–10:15<br>Gymnasium | | | | |
| 11 : 00 | 10:15–10:45<br>Social Studies | | | | |
| | 10:45–11:00<br>Spelling | Room problems | | Spelling | Room problems |
| 11 : 00<br>12 : 00 | 11:00–12:00<br>Creative Music | 11:00–11:35<br>Science | | 11:00–12:00<br>Creative Music | 11:00–11:35<br>Science |
| | | 11:35–12:00<br>Spelling | | | 11:35–12:00<br>Spelling |
| 12 : 00<br>1 : 00 | Lunch and Recreation | | | | |
| 1 : 00<br>2 : 00 | 1:00–1:45<br>Room Council | 1:00–1:35<br>Music | 1:00–2:00<br>Shop | 1:00–2:45<br>Creative period | 1:00–1:35<br>Music |
| 2 : 00<br>3 : 00 | 1:45–2:45<br>Individual-work period | 1:35–2:45<br>Library period | 2:00–2:45<br>Fine arts | | 1:35–2:45<br>Fine arts |
| | 2:45–3:00<br>Afternoon Lunch | | | | |

### DAILY PROGRAM. GRADE VI, CLASS 1

<table>
<tr><th>TIME</th><th>MONDAY</th><th>TUESDAY</th><th>WEDNESDAY</th><th>THURSDAY</th><th>FRIDAY</th></tr>
<tr><td rowspan="2">9:00<br>10:00</td><td colspan="2">9:00–9:45<br>Arithmetic</td><td>9:00–9:45<br>Assembly</td><td colspan="2">9:00–9:45<br>Arithmetic</td></tr>
<tr><td colspan="5">9:45–10:15<br>Gymnasium</td></tr>
<tr><td rowspan="2">10:00<br>11:00</td><td rowspan="3">10:15–11:30<br>†</td><td>10:15–10:30<br>*</td><td rowspan="2">10:15–11:00<br>†</td><td colspan="2">10:15–10:30<br>*</td></tr>
<tr><td>10:30–11:00<br>Music</td><td colspan="2">10:30–11:00<br>Music</td></tr>
<tr><td rowspan="2">11:00<br>12:00</td><td colspan="4">11:00–11:30<br>French</td></tr>
<tr><td colspan="5">11:30–12:00<br>English ‡</td></tr>
<tr><td>12:00<br>1:00</td><td colspan="5">Lunch and Recreation</td></tr>
<tr><td>1:00<br>2:00</td><td rowspan="2">1:00–2:45<br>Household arts</td><td rowspan="2">Fine arts</td><td rowspan="2">†</td><td rowspan="2">Creative-work period</td><td rowspan="2">Industrial arts</td></tr>
<tr><td rowspan="2">2:00<br>3:00</td></tr>
<tr><td colspan="5">2:45–3:00<br>Afternoon Lunch</td></tr>
</table>

* Writing book reviews, renewing books, conference with teacher.

† Class discussion and research on problems contributing to unit of work.

‡ "English" includes spelling and written work connected with magazine or problems under discussion.

### Records and Reports

The office files contain outlines of work of each class for the ten years of the school's existence. The outlines are sometimes similar to the detailed descriptions which we have given and sometimes more abbreviated, as are the summaries of work which are given on pages 240–258. In the office files are stenographic reports of assembly programs, of interesting parts of certain units of work, of class discussions, and of whole units of work covering long periods of time. From such reports we have been able to make accurate detailed descriptions, and from them has been gathered much of the material contained in the school booklet on assemblies, in the book on boats, which is soon to be issued, in the mimeographed booklets kept in the elementary office files, and in other school publications. Teachers who wish to get suggestions for their own work or to find out what any group of pupils has had in its school experience may use the files at any time. Copies of outstanding pieces of pupil-work are also kept in the elementary office. In the absence of a fixed course of study, such records should always be kept.

Through the elementary office teachers make reports twice each year to the parents about the progress of the pupil. The reports consist of two parts. One part concerns achievement in subjects of study. Information is given as to whether the pupil is progressing at the proper rate and whether he is doing as much as could be expected. The second part concerns habits and attitudes (see pages 290–292). Unsatisfactory habits and attitudes are checked, and in cases of need the parents are asked to come for conference with the teacher and perhaps even with the principal. Individual conferences, indeed, are much more satisfactory than any other kind of report which can be used. The written report, while not as satisfactory, does save time. That is the reason for its use. It serves in all but extreme cases.

The office maintains a complete system of pupil accounting, which need not be discussed at this time, since it has no particular bearing upon curriculum making. Comprehensive case studies of pupil adjustment are being made for the purpose of seeing whether this is a profitable venture which might be undertaken by other schools.

## SUPERVISION

An important piece of work which the administrative and supervisory forces of the school must assume is that of making sure that no significant phase of the environment or of subject matter is omitted from the educational path of the child. If the organization of subject matter around units of work becomes basic to the curriculum it must be the duty of some supervisory officer to see that there are no unwise overlappings and no omissions which cause warping or one-sidedness in the individual. The supervisor can remedy any such defects. Are pupils getting into touch with all parts of their environment? Is their horizon widening in ever broader and more complete circles? It takes only a little forethought and intelligent study of what has been done and is being planned to discover that some certain phase of experience needs greater emphasis than it is receiving. In time it may be possible to describe and enlarge upon a number of units of work, having equivalent values, from which the teacher may select.

Supervision in the elementary division of the school has made use of the same techniques which teachers use in the classroom. Teachers who are just beginning work in the school are shown the many records of work which has been carried out in the classrooms. They are led to contribute to certain whole school activities, such as assembly and council. They are encouraged to ask for help at any time. In the last analysis, however, they are made to feel that the responsibility for the work inside the classroom is theirs. From that kind of sympathetic understanding of the place of the supervisor, both as one who stands aside and lets the teachers work and as one who knows how to help when help is needed, the development of the wealth of newer curricular material for the elementary school has emerged. Supervision has enlarged and enriched the school life in which pupils and teachers and officers grow together. All who are concerned with a unit of work freely contribute their thought to it, thereby giving a better type of supervision than if any one person were exclusively charged with it.

## Parent Education

A school cannot safely go faster in its educational procedure than parents can follow. Then, of course, something must be done to keep the parents informed of what the school is attempting. We quote from a bulletin prepared by a committee from the association of the parents connected with the school.

> From the earliest days of the school the parent and his attitude were considered very important factors, the belief being that education consists not alone of what happens to a child within the school but also of what happens to him and around him outside of school. Then, too, the school early accepted the parents'

proffered coöperation and joint activities were initiated. The parents have already contributed much toward the spread of ideas concerning progressive education and are at present looking forward to making certain contributions to educational literature. For example, the Special Study Class hopes that eventually it can contribute case studies in which the data regarding children will be more complete than is usually possible, because in this instance mothers themselves will have made the studies. There is need also for parents to study and report on children's interests and normal ways of behaving in the home, as it is very difficult for an outside observer to secure such records.

The activities engaged in by parent-teacher groups over a period of seven years are classified under the heads of Parent-Teacher Association, the Parents' Study Group, and the Classroom Conference.

The Parent-Teacher Association has directed its activities along three general lines. First, it holds from four to seven evening meetings during the school year to which all parents of Lincoln School children are invited. Each meeting is followed by a social hour and refreshments. Second, parent-pupil dinners have been an established activity of the association. Third, the association has assisted extra-curricular activities of the pupils by its contributions to the school cabin at Pocantico Hills, field meets, senior class parties, and especially to the high-school literary magazine, *Lincoln Lore.*

In the early days of the school, classroom conferences were held, including the mothers of pupils in the grade and the grade teacher, where matters of broad educational significance as well as specific classroom problems were discussed. These conferences are still continued on definite classroom work, but much of the discussion on general education has been included in the larger Parents' Study Group.

The Parents' Study Group each year holds regular morning meetings. Six or eight of these meetings are usually devoted to lectures and the remaining meetings to informal group discussions based on the practical applications of the lectures to educational problems. A special study class was planned. This is a smaller group for more intensive study of younger children. It has established a library of study books for parents. The books are kept in one section of the school library.

Through such a program as this the parents not only have come to understand the school better, but they have assisted often and very materially in our efforts at curriculum-making through a sympathetic understanding of what the school has been attempting to do. Through the study of the methods of modern education parents are able to harmonize their contributions to the education of their children with school contributions.

# CHAPTER XI

## NEED FOR FURTHER INVESTIGATIONS

Among the questions which we have constantly asked ourselves is "Will what we have done work in another school?" That can be known only after sufficient trial in many places. The next step, then, in advancing the experiment is to extend the program of coöperation with other schools, both public and private, and under careful supervision to give a curriculum of educative units of work and activities a fair chance to demonstrate its value.

Already many schools are well launched upon programs of work similar to ours. We wish only to put ourselves on record as joining forces with them in sincere efforts to find what are the best curricular materials and the most valuable ways of working for elementary schools. The more units of work which are developed, the more rapid will be the progress which can be made in analyzing their educative implications. Developing tentative outlines and showing the possibilities in content and in materials for many units of work will prevent waste of time for teachers who wish to work with them.

There is a great need for a different kind of check if such a program of work as has been described is to be followed. We have used the standard tests to show achievement in reading, arithmetic, and spelling. We have analyzed our units of work in terms of subjects of study. We think, however, that success in subjects of study is less significant than the opportunities offered by such a curriculum for the development of initiative, responsibility, and creativeness, for example, by the pupils. Tests are not now available to show what a school does to promote those traits. One group of workers in our school is now attempting to devise tests on "pupil planning." It has asked itself, "What growth in this ability to plan is made in various grades or at various ages?" "What special assistance can the teacher give at these different levels?" "In what situations does the child grow best in planning ability?" The answers to its questions and to similar questions about other traits ought to aid materially in satisfying those who wish to know positively some of the more intangible values which they are sure inhere in the kind of curricular material which has been outlined in previous chapters.

If any unit has particular values for any grade, that ought to be known. How far to carry the work in any grade must also be painstakingly investigated. Manifestly most units could be placed on college level just as well as on any grade level.

Often in working with certain units a serious lack of books of good content material, suitable for the particular grade level, has been felt. There are at present in preparation some books which will furnish the desired content on the level of the children. Those which are soon to be published are

Coleman, Satis N. Bells: Their History, Making, Legends, and Use. Rand McNally & Company.

Coleman, Satis N. First Steps in Playing and Composing. Lincoln School Experimental Edition.

Coleman, Satis N. The Drum Book. Lincoln School Experimental Edition.

Coleman, Satis N. The Marimba Book. Lincoln School Experimental Edition.

Curtis, Nell. Boats. Rand McNally & Company.
Tippett, James S. I Live in a City. Harper & Brothers.
Tippett, James S. The Singing Farmer. World Book Company.

These are books made by teachers in the Lincoln School to satisfy definite needs for content in connection with units of work. Of course many books have been published by other people. Still more books of similar richness in content will need to be written for other units. For many units, to be sure, a selected list of books already in the market will be sufficient.

Teachers in the grades will wish to know more specifically how to secure mastery in reading, arithmetic, or composition, or how to initiate and carry out the whole program of activities. Such Lincoln School publications as "Second Grade Curriculum Studies" or "Schoolroom Aquaria" will help. It is imperative that more teachers describe minutely just what they do. Books of method in subjects of study as they grow out of activities and enrich them are needed. There is a special technique in the teaching of reading or of arithmetic or of spelling if they are thought of as growing out of and satisfying needs.

These are some of the immediate problems and needs which we feel. Through the solution of the problems which have been suggested and the satisfying of the needs which have been named we confidently hope for the enrichment of our own efforts at curriculum making in our school and for the expansion of those efforts into broader usefulness in elementary schools in general.

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